

## A specific neutralizing single chain antibody against conserved sequence of hemagglutinin for prophylaxis and treatment of influenza infection

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### ABSTRACT

**Introduction:** Influenza epidemics have been recognized as a major cause of morbidity and increased mortality. Hemagglutinin (HA) is responsible for attachment of the virus to specific receptors on the host cell surface and has been the main target of influenza virus neutralizing antibodies. Single-chain fragment variable antibodies (scFv) are useful agents for viral immunotherapy due to their small size and high affinity properties. In this study a neutralizing scFv was selected against HA of H1N1 influenza virus.

**Materials and Methods:** A conserved sequence of HA was applied as an epitope and specific scFvs were selected. Panning procedure was carried out to select the phage particles bearing anti-epitope scFvs. The peptide was coated on immunotube. The phage rescue supernatant was added and eluted with Ecol TG1. After four rounds of panning, specific clones were selected using PCR and DNA fingerprinting. The neutralizing effects of the clones were evaluated by plaque reduction assay.

**Results:** Two specific scFvs with frequencies 75% and 20% were selected against the conserved sequence of HA. The neutralising effect more than 90% was obtained for one of the clones.

**Conclusion:** A new prophylaxy and treatment strategy is needed to prevent influenza epidemic and pandemic spread. Neutralizing scFvs can play a crucial role in this regard. In this study a successful panning process was performed and two specific scFvs with frequencies 75% and 20% were selected. The neutralizing effect of more than 90% of one of the clones offers the usefulness of these recombinant antibodies in the treatment or prevention of influenza in high risk patients.

**Keywords:** Single chain antibodies, Hemagglutinin, Neutralization, Influenza virus, Selection

## A Study of Pneumonia Associated with Ventilator in Children younger than 16 Years Admitted in ICU in 2012 and 2013

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### ABSTRACT

**Introduction:** We conducted a cross sectional, observational study in a tertiary care pediatric center (Dr Sheyiekh hospital northeast of Iran) to determine risk factors for the development of and outcomes from ventilator-associated pneumonia (VAP).

**Methods & Materials:**

From 2012 to 2013, all surgical ICU and PICU patients mechanically ventilated for 48 hours were eligible for enrollment after parental consent. The primary outcome measure was the development of ventilator-associated pneumonia, which was defined by both Centers for Disease Control and Prevention/ National Nosocomial Infections Surveillance criteria and clinician diagnosis. Secondary outcome measures were length of mechanical ventilation, ICU length of stay, blood biochemical changes, CRP, radiological changes morbidity, and death.

**Results:**

One hundred and thirty patients were enrolled. Twenty-nine patients had VAP and 101 patients had not. The median age was 1 month, and 60% were boys. The most common ventilator-associated pneumonia patients with ventilator-associated pneumonia had greater need for mechanical ventilation (29.31 vs 8.45 mean ventilation days), and increased absolute hospital mortality (48% vs 30%) than those without ventilator-associated pneumonia.

**Conclusion:** In mechanically ventilated, critically ill children, those with ventilator-associated pneumonia had a prolonged need for mechanical ventilation, a longer ICU stay, and a higher mortality rate.

**Keywords:** ventilator-associated pneumonia, ICU, mortality due to VAP

## A study of the isolated bacteria from blood cultures of cancer patients and their antibiotic resistance

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### ABSTRACT

**Introduction:** One of the main causes of increased mortality in cancer patients is bacteremia. On the other hand, antibiotic resistance is the major cause of treatment failure in malignant diseases especially in hematological malignancies. The aim of this study was to diagnose the bacterial strains isolated from blood specimens of cancer patients referred to Tabriz Shahid Ghazi hospital and to determine their antibiotic susceptibility.

**Methods:** In this cross-sectional study, total of 613 cancer patients especially leukemia patients from Shahid Ghazi Hospital of Tabriz were enrolled to research. After obtaining 0.5 ml of venous blood from patients, blood cultures and antibiotic susceptibility tests were performed using standard methods and BHI, EMB, Blood agar and Muller Hinton agar media. Afterward, antibiotic susceptibility test was performed using disc diffusion method with a wide range of antibiotics.

**Results:** Out of 613 cultured specimens, 153 cases (25%) were found to be positive, including 76.47% gram negative and 23.53% gram positive bacteria. The most common isolated bacteria were *E. coli*, coagulase-negative *Staphylococci*, *Klebsiella*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*, respectively. The antibiogram tests demonstrated that *E. coli* susceptibility to gentamicin was maximum whereas to ampicillin was minimum.

**Conclusions:** It seems that ceftriaxone is the best drug of choice for the treatment of bacteremia caused by gram negative bacteria whereas gentamicin can be used to treat bacteremia cases caused by gram positive agents. According to the high level of resistance to the commonly used antibiotics in this study, apparently early prescription of antibiotics and utilization of ineffective doses of them should be considered to prevent the development of drug resistant bacteria in such patients.

**Keywords:** Cancer, Blood cultures, Bacteremia, Antibiotic resistance.

## Antibiotic resistance to *Staphylococcus aureus* strains isolated from patients admitted to Qaem hospital during 2010-11

### ABSTRACT

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**Introduction:** *Staphylococcus aureus* is a major human pathogen. *S. aureus* infections result in extra hospital days and extra in-hospital costs. Due to high prevalence of *S. aureus* infections and its increasing resistance to antibiotics, physicians have faced some difficulties in selecting proper empirical treatment. In this study we intended to determine the antibiotic resistance pattern of clinical *S. aureus* isolates from patients of Qaem university hospital during 2010-11.

**Materials and Methods:** 140 *Staphylococcus aureus* isolates were distinguished from different specimens in laboratory. The specimens (including 65 urine, 34 wound, 12 blood, 12 stool, 10 abscess and 7 sputum samples) were gathered and examined by standard diagnostic methods. Their sensitivity to different antibiotics was identified by means of standard disc diffusion method. The antibiotic sensitivity of bacteria were reported according to the Clinical Laboratory Standards Institute (CLSI) manual with sensitive (S), intermediate (I) and resistant (R).

**Results:** Staphylococci isolates were highly resistant against Ceftazidime and Cefixime (94%), followed by Penicillin (91%), Ampicillin (82%), Cefotaxime (65%), and Erythromycin (60%). Nearly all strains were susceptible to Vancomycin.

**Conclusion:** These results are fairly similar to the ones reported from other sides of our country. According to this study, antibiotic resistance among *Staphylococcus aureus* strains is extremely common in patients of Qaem hospital. Unfortunately prescriptions for ineffective antibiotic drugs are pretty much common among physicians in our country. In order to decrease this high range of resistance, *Staphylococcus aureus* infections should be treated with more care and precaution.

**Keywords:** *Staphylococcus aureus*, Antibiotic resistance, Nosocomial infection

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## Antibiotic utilization in the internal wards of a teaching hospital in Iran in comparison with other countries

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### ABSTRACT

**Introduction:** Bacterial resistance has emerged as an important factor influencing patient mortality and morbidity. A direct relationship between rates of antibiotic use and the emergence of resistance has been reported in several studies. It is essential to monitor the utilization of anti-bacterial drugs in order to establish appropriate measures to control them.

**Materials and Methods:** This retrospective descriptive study was carried out to evaluate the anti-infective consumption in the internal wards of Baqiyatollah hospital in Iran, over one year, from 20 March 2013 to 20 March 2014. The defined daily dose (DDD) methodology and the Anatomic-Therapeutic-Chemical (ATC) classification suggested by the World Health Organization (WHO) were employed. The ATC/DDD system is gold standard tool for exchanging and comparing data on drug use at international, national or local levels. Data were expressed as DDD/100 bed-days and the results were compared with dose of other Iranian and foreign hospitals.

**Results:** During the study period, total antibiotic consumption was 122.52 DDD/100 bed-days, of which 64.7% were parenteral. The three most commonly used group of drugs were carbapenems (26.83), third generation cephalosporins (22.76) and macrolides (20.82) in terms of DDD/100BD.

**Conclusion:** The first mostly prescribed group of anti-infectives was carbapenem. Considering similar studies in internal wards of France (2007), and Italy (2004), the carbapenem usage in our internal wards was 127.7, 44.7 and 15.5 times higher in order of appearance. The higher use of systemic anti-infective agents in our study, especially broad-spectrum agents, implies the possibility of irrational prescribing, higher prescribed daily doses than DDDs, and also drug wastage. The results may serve as a basis for further investigations and advanced drug policies.

**Keywords:** Antibiotic consumption, ATC/DDD, Internal wards.

## Antimicrobial resistance pattern of *Pseudomonas aeruginosa* in clinical isolates of Imam Reza Hospital in Mashhad, the Northeast of Iran

### ABSTRACT

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**Introduction:** *Pseudomonas aeruginosa* is one of the most important causes of nosocomial infections especially in burn and Intensive Care units. Due to acquired resistance to many antibiotics, Eradication of *P. aeruginosa* infections is very difficult. This study was conducted to detect Prevalence and Antibacterial Susceptibility pattern of clinical isolates of *P. aeruginosa*. In this study we examine antibiotic susceptibility pattern of *P. aeruginosa* to help in control and treatment of nosocomial infections in Imam Reza teaching hospital as one of the main centers of medical sciences in the northeastern of Iran.

**Materials and Methods:** *P. aeruginosa* isolates were collected from various wards of Imam Reza teaching hospital and then were approved based on morphological characteristics and biochemical tests. Antibiotic susceptibility test was conducted by disc diffusion method according to CLSI guideline recommendations. The diameter region of the susceptibility zone was measured by calibrated ruler and interpreted according to CLSI guideline recommendations. Data Analysis was conducted using SPSS version 11.5.

**Results:** In this study, resistance to ciprofloxacin was 63.1%, Cefepime 59.3%, Gentamycin 64.7%, Cotrimoxazol 89.3%, Amikacin 59.3%, Cephtazidim 44.9%, Imipenem 55.5%, Meropenem 64.6% and Pipracilin 56.9%. Unlike these antibiotics, resistance to colistin in *P. aeruginosa* isolates is 2.1%.

**Conclusion:** This study indicates that antibiotic resistance to all antibiotics except colistin was high. Thus we recommended these antibiotics not to be used to treat this bacterium. Colistin can be used as selective choice to treat this bacterium. Because of high antibiotic resistance of *P. aeruginosa* isolates in various wards of this hospital, its control and eradication is hard.

**Keywords:** *Pseudomonas aeruginosa*, Antimicrobial resistance, Colistin

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## Assessing compliance strategies for prevention of hepatitis B infection in health team

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### ABSTRACT

**Introduction:** Health team should be considered as an occupational hazard. Risk of blood-borne viruses and preventing needle stick injuries, high costs of treatment and many patients capability leads to principles that called standard precautions. The aim of this study was to evaluate the standard precautions for preventing hepatitis B infection in the health care staff.

**Methods:** A cross sectional study was conducted on 135 employees of health services. Data were collected using questionnaires and data were analyzed by SPSS software v19.

**Results:** 23% of employees at one time during their working years had been injured. For example, 30 (21%) of injuries were reported. Logistic regression analysis showed that the most important factors in reducing the risk of injuries and raise the standard precautions; health care workers Willingness to work (OR =1.78, CI=6.38-0.49), standard precautions at the health center officials (OR =1.67, CI=3.62-0.53), respectively. among jobs ( $p= 0.12$ ), jobs status, education level, the cause of injury ( $P< 0.05$ ) and Injuries were significantly relation. The most common cause of injury in this study was get blood (10.40%) and the Means or Instrument of damage was needle (11.10%) respectively.

**Conclusion:** Our findings need to be revised in new construction principles affecting specialists' standard precautions for prevention of hepatitis B infection show.

**Key words:** Prevention strategies, prevention, hepatitis B infection, health, workers, needle stick injuries, sharps injurie

## Assessment of hand hygiene of medical staff based on 5 positions of WHO in two public hospitals

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### ABSTRACT

**Introduction:** Transmission of pathogens in hospitals usually takes place through contaminated hands of medical staff. Epidemiologic evidence indicates that transmission of hand contamination is the major factor of current infections in hospitals. Because medical staffs directly take care of patients, therefore, they have significant role in the prevention of Nosocomial infections. According to CDC recommendations, the most effective and inexpensive action to prevent nosocomial infection is hand hygiene.

**Materials and Methods:** The current cross-sectional study has been conducted in Ibn Sina and Hashemi Nejad hospitals. According to WHO's standard form of assessment of washing hand as a means of study and also by using direct observation method, 11200 medical personnel in this research have been analyzed. They have been examined based on 5 situations of hand hygiene in various therapeutic sections including before patient contact, before aseptic action, after contact with secretions from patients, after patient contact and after contact with the patient's milieu. Spss software was used to analyze data.

BEFORE PATIENT CONTACT 50.64%, Before ASEPTIC TASK 5.66%, AFTER BODY FLUID EXPOSURE RISK 50.64. , AFTER CONTACT PATIENT 7.67%, AFTER CONTACT WITH PATIENT SURROUNDINGS 7.161%

**Conclusion:** The results show that hand hygiene mostly occurs after contact with infected secretions and after contact with patient, but other situations of hand hygiene are ignored. Therefore, it is necessary to have an educational planning to increase the level of knowledge of health care personnel of hand hygiene, and also eliminating barriers to improve compliance with hand hygiene is effective.

**Keywords:** hand hygiene - Nosocomial infection - medical staff.



## Assessment of microbial species of nosocomial infections in different wards of pediatric hospital, khoramabad in 2013-2014

### ABSTRACT

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**Introduction:** Nosocomial infections (NI) continue to be clinically and epidemiologically important spite of significant progress in antimicrobial therapy. The aim of this study was to assess microbial species of nosocomial infections in different wards of madani hospital in 2013-2014.

**Methods:** In this cross sectional study 210 samples were collected from different wards (neonatal intensive care units (NICU), pediatric intensive care units (PICU), pediatric general ward, emergency room, neonatal ward, infections ward, thalassemia ward, clinics, kitchen and autoclave) and were cultured before applying disinfectants. Sampling was done many times from 18 places. Data were analyzed using Spss software.

**Results:** In this study 210 samples were collected and cultured. Out of 210 samples 65 samples were positive. The most positive samples were from neonatal ward, infections ward, NICU and emergency room. Microbial growth is as follow; Staphylococcus saprophiticus 27.7%, citrobacter sp. 26.2%, enterococcus fecalis 24.6%, Escherichia coli 7.7%, Staphylococcus aureus 6.2%, Klebsiella pneumonia 3%, Klebsiella sp 1.5%, proteus sp 1.5% and Staphylococcus hemoliticus 1.5%.

**Conclusion:** The findings showed that the prevailing microbial species of nosocomial infections in different wards of madani hospital were Staphylococcus saprophiticus, citrobacteret .sp and enterococcus fecalis.

**Keywords:** Nosocomial infections, Microbial species, khoramabad



## Audit process model of the prescription pattern of antibiotic prophylaxis before and during midwifery surgeries in Tabriz Al-Zahra Medical and Teaching center winter2014

### ABSTRACT

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**Introduction:** Surgical site infection is the most common infection that causes increased perioperative mortality, morbidity and imposes additional costs to the health system and patient. Early administration of antibiotics is an essential role in the prevention of infection.

The purpose of this study was to audit model preoperative and intraoperative administration of antibiotic prophylaxis in cases of Cesarean section after cord clamping, which in accordance with instruction No.8 of approved managed care by health department focuses on improving the quality of the obtained results.

**Methods:** This study is an intervention , FOCUS- PDCA approach for patients undergoing surgery hospital in Tabriz2014 was conducted . Random review of patient records (60 Persian date June 2012 cases , 75 cases July 2013) , collection questionnaire data . Completed in three stages was assessed using the Excel program .

**Research findings :** The results showed that , after collecting and analyzing data in two stages , during cesarean section in 100% of patientsAntibiotic prophylaxis was administered Cefazolin standard , the dose and duration of the Antibiotic consumption intervals (3gr Cefazolin within 18 hours ) after the action was appropriate . In addition, 100% of patients were discharged without prescription drug Cephalexin ,

**Conclusion :** According to the audit process model prescribed antibiotics to patients , according to the interventions Notably the training and briefings for physicians for clarification of managed care is No 8 and antibiotic prophylaxis protocol

**Keywords:**prophylaxis,antibiotic,Surgery,infection

## Biofilm formation and its relation to phenotypic and genotypic criteria in staphylococcus aureus isolated from clinical samples obtained from patients in Esfahan hospitals

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### ABSTRACT

**Introduction:** S.aureus is recognized as the most important hospitalize pathogen. This study was the extent of biofilm formation by S.aureus isolates and is relation to some phenotypic and genotypic criteria.

**Materials and Methods:** in this study 110 strains of S.aureus isolated from clinical specimens in Esfahan were selected. Ability of biofilm formation was measured by microtiter plate assay. All isolates were then examined for presence of the icaABCD with multiplex-PCR method.

**Results:** the results show that 55% of strains have Ica A, 43/2% Ica B, 67/3% Ica C and 59/5% Ica D. in this strains, skin wounds sample and tracheal secretion sample were produce more biofilm formation. Antibiotic resistance pattern show 90/2% methicillin resistance. Vancomycin resistance was the lowest antibiotic resistance.

**Keywords:** staphylococcus aureus, genotypic criteria

## Comparison criteria affect to hospital infections in the intensive care unit

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### ABSTRACT

**Introduction:** Hospital infections are a major problem of modern medicine and a common cause of increased mortality, prolonged hospital stay, hospital costs and health risks is updated. One of the areas with the highest incidence of this complication, and is the intensive care unit. This study was conducted to examine the extent of further infection and factors affecting it in intensive care unit.

**Materials and Methods:** This cross-sectional retrospective cohort of all patients From March to September 1393 at the Hospital Civil martyr Branch hospitalized in intensive care units 1 and 2. Inclusion criteria by definition of CDC, patients who were admitted without any signs of infection, and 48 h after infection were admitted to hospital. Number of hospitalizations, number of deaths, average length of stay, age and gender in intensive care units and the percentage of Hospital infections caused by different kinds of infections in the infection step was calculated and recorded.

**Results:** During the six months month study, 311 patients in intensive care units 1 and 169 patients were admitted to the of ICU2 during the study period, 38 cases of infection were observed in these patients. 84/2% Cases were in men. Hospital infections rates in intensive care unit 1 were %9.32 and in icu2 were % 5.32 with average of 7.91 percent. Pneumonia with 76.3% was the most common Hospital infection. Gram-negatives (42.1%) and the S. Koaglaz (26/31%) were the most common cause of infection during this period.

**Conclusion:** Hospital Infection in Intensive Care Unit of Shahid madany hospital is common among old people spent three days in the intensive care unit. The frequency of this complication is similar to or greater than the studies that have been conducted in other regions of the world. It has a direct and significant relationship between the incidence of Hospital infection with an average length of stay, age and the number of admissions. But for proving the relationship between infection rate and the number of deaths, more research is needed.

**Keywords:** Hospital infections - intensive care unit - Duration of hospitalization

## Comparison of Laryngoscope Blades Bacteria Grown in the Mosaibne Jafar Hospital in Quchan

### ABSTRACT

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**Introduction:** Identify and determine of the contamination's tools and type is One of the main ways in nosocomial infection control. The aim of this study was to determine the type of Laryngoscope Blades Bacteria Grown in the Treatment Units of Mosaibne jafar Hospital in Quchan.

**Methods:** Descriptive and randomly study was conducted. 104 Laryngoscope blades sampling was conducted with sterile swab during 4 months. The slides were prepared of the Created Clooney, type and severity of bacterial growth was assessed. In the end, Statistical data were analyzed using relevant test by SPSS 17 software.

**Results:** The findings revealed Severity of infection in the operating room was more than other Treatment Units. Pediatrics and Surgery in men had the lowest contamination. In total 55 (52/9%) were infected. Most types of microbial contamination associated with coagulase negative staphylococcus strains with 36.4% (n=20) and the least polluting type associated with enterococci 9.1% (n=5).

**Conclusion:** Considering under sterile conditions in the operating room, recommended for washing and disinfecting the equipment Especially Laryngoscopes more accurate and more complete performed.

**Keywords:** laryngoscope, bacteria, Treatment Units, Nosocomial infection

## Comparison of the complications of intravenous catheter in children between two methods; the conventional method and changing the catheter according to clinical indications: A randomized clinical trial

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### ABSTRACT

**Introduction:** In our country the usual time for changing the intravenous catheter is 72 hours, which can be increased in children, based on international references. These limitations are due to complications of catheters such as phlebitis and obstruction. The aim of this study was to compare the complications of intravenous catheter in children between two methods; the conventional method and changing the catheter according to clinical indications in Imamreza hospital, Bojnourd, Iran.

**Materials and Methods:** 150 hospitalized children were involved in this randomized clinical trial. Qualified children were divided into two groups. Each group included 75 children. In the first group, catheters were replaced according to the conventional methods (after 48 hours), while in the second group the catheters were replaced due to the complications of the catheters. Data were analyzed by descriptive statistics, K<sub>2</sub> test, independent T, mann whitney, kaplan meier curve, and log-rank test using Spss v12.

**Results:** Among all cases, 31 complications such as infiltration, phlebitis, and obstruction were observed. The average time to replace the catheter in intervention group was 92 hours which was significantly higher than the control group (67 hours). However, the frequency of infiltration was significantly higher in intervention group than control group, but there was no significant difference in the complications.

**Conclusion:** Results indicated that the clinical indication methods are in priority to the conventional methods in replacing the catheter.

**Keywords:** clinical indications, conventional methods

## Comparisonal assessment of serum procalcitonin level in adult febrile patients with infectious and noninfectious disease

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### ABSTRACT

**Introduction:** routine laboratory tests lack both sensitivity and specificity in correctly identifying which patients should receive antibiotics, and the results of most confirmatory microbiological tests are not available for 24 h. the serum concentration of procalcitonin increases rapidly in patients with systemic infections. High procalcitonin concentration is sensitive and specific for diagnosis of sepsis. The aim of this study is comparison of serum procalcitonin level in adult febrile patients with infectious and noninfectious diseases.

**Materials and Methods:** eighty-six adult patients who were admitted for acute fever (temperature  $\geq 38^{\circ}\text{C}$ ) were enrolled in the study if they had infectious (bacterial and viral) and noninfectious (inflammatory) diseases. Blood samples were obtained for determination of serum PCT level, CRP level, and ESR. The PCT level was measured by immunoluminometric assay. The variables were analyzed with SPSS.

**Results:** 59% of patients were male. Considering a cutoff point (0.56 ng/ml), the sensitivity, specificity, positive predictive value and negative predictive value of PCT for diagnosis of bacteremia were 56%, 98%, 94% and 80%, respectively. There was significant difference in PCT level in bacteremic group in comparison with viral infections and noninfectious diseases.

**Conclusion:** PCT assay is highly specific for bacterial infections, particularly in patients that will have positive blood cultures. This assay could be useful for determination of which patients need antibiotics.

**Keywords:** infection, bacteremia, procalcitonin



## Cosideration of microorganisms involved in the infection of burns (In patients admitted to burn centers of mashhad imam reza hospital in 18 months)

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### ABSTRACT

**Introduction:** Burn is one of the factors in addition to skin damage, often associated with various infections. The purpose of this study was to identify common types of micro-organisms involved in burn infections of the admitted patients.

**Material:** In a study of 107 patients admitted to burn centers, women and men of mashhad imam reza hospital in 18 months, cultured B / C - Bactec for these patients was performed & The data was analyzed with spss 16 software.

**Results:** 1. total of patients were 107 (72 females and 35 males).

2. In cultured B / C - Bactec, 62.5% of females and 74% of male patients, showed no antimicrobial agent.

3. The positive cultures were obtained from the most common microorganisms involved in burn infections were reported as follows:

A) Acinetobacter with the highest (52% of women - 66% of men)

B) Kelebsiella (16% of women - 11% of men)

c) Staphylococcus (8% of women - 11% of men)

d) Pseudomona aeruginosa (8% of women - 11% of men)

**Conclusions:** Importance of Clinical significance of microorganisms involved in burn infections and the need to take appropriate measures to prevent and minimize the spread of infection in hospitalized patients is necessary.

**Key words:** Microorganism -Burn wound infection- Acinetobacter -Kelebsiella - Staphylococcus- Pseudomona aeruginosa



## Design and recombinant expression of a pentavalent chimeric protein as a candidate vaccine against 3 enteropathogenic bacteria: ETEC, EHEC, and Shigella dysentery in E. coli expression system

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### ABSTRACT

**Introduction:** Enteropathogenic bacteria cause health problems and deaths in both developing and developed countries. Among them E. coli and shigella species are so important. ETEC is responsible for many deaths in children under 5 and also traveler's diarrhea; EHEC is the major etiological agents of hemorrhagic colitis and the life-threatening hemolytic uremic syndrome (HUS); and Shigella cause shigellosis that could be mortal in any ages. So, there is a great interest for the development of an effective vaccine against these pathogens. Here we designed a pentavalent chimeric gene as a candidate vaccine against these three species.

**Materials and Methods:** First, the appropriate immunogens of each strain were chosen. These proteins were fused together by an appropriate linker. Bioinformatic and immunoinformatic studies were done. The chimeric gene was sent for synthesis to Biomatik Corporation (Canada). After receiving recombinant vector, the vector was transferred to BL21 (DE3) competent cells. Then, the existence of the gene in the vector was approved. The expression of the desired protein was induced by IPTG. SDS-PAGE analysis and western blotting were done for the approval of the chimeric gene expression.

**Results:** The results showed a good 3D structure and also appropriate immunogenicity of the protein. The SDS-PAGE and Western blot analyses showed an appropriate expression of the chimeric gene.

**Conclusion:** The designed protein structurally and immunologically has almost all factors of an efficient candidate vaccine. The expressed protein is ready to be administered to animal models for immune response evaluation.

**Key words:** Enterotoxigenic Escherichia coli (ETEC), Enterohaemorrhagic Escherichia coli (EHEC), Shigella dysentery, Candidate vaccine, Chimeric protein

**Keywords:** enteropathogenic bacteria, E. coli, chimeric protein

## Detection of antibiotic resistance pattern in staphylococcus aureus isolated from clinical samples obtained from patients in Esfahan hospitals.

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### ABSTRACT

**Introduction:** staphylococcus aureus is one of the important pathogen that occur death in Iran and the world. Today there is antibiotic resistance because of unlimited uses of antibiotic drugs, that effect on intricate of remedy. This study was conducted to track the antibiotic resistance genes in S.aureus strains isolated from clinical specimens obtained from patients in Esfahan hospitals' and antibiotic resistance pattern in strains.

**Materials and Methods:** In this cross-sectional study in one year's S.aureus collected from patients from Esfahan hospitals. These strains were using laboratory standard methods and culture specific. The antibiotic susceptibility testing was performed using disk diffusion on plate. Furthermore, the presence of 3 genes responsible for antibiotic resistance, including mec-A, Tet K, Tet M was investigated using multiplex-PCR method.

**Results:** based on the phenotypic investigation on antibiotic resistance of S.aureus show that, the highest rate were seen in treatment with methicillin (90/2%), erythromycin (89/7%), ciprofloxacin (89/5%), penicillin (88%), tetracycline (82/4%), gentamycin (75/8%). The lowest sensitivity was observed in treatment with nitrofurantoin (12%), and vancomycin (10%).

**Conclusion:** In contrast to other study results, our study showed that high rates of antibiotic resistance in S.aureus isolated from patients hospitalized in Esfahan. If here were no limitation for drug uses, there will be blind in remedy.

**Keywords:** S.aureus, antibiotic resistance, hospitalized infections of Esfahan.

## Determination of Antibiotic Resistance Pattern and Genetic Diversity of *Pseudomonas aeruginosa* Isolated from Patients admitted in Zabol Hospitals by RAPD method

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### ABSTRACT

**Introduction:** *Pseudomonas aeruginosa* is widely distributed in nature and due to genetic variation can cause a broad spectrum disease such as urinary tract infections, severe infections, particularly in patients with severe burns, respiratory system infections and bacteremia. Multidrug-resistant *Pseudomonas*, which can cause serious infections both in the community and the hospital environment, are a serious problem in public health. The purpose of this study was to determine genetic diversity and patterns of antimicrobial resistance of *P. aeruginosa* strains isolated from patients admitted to hospital in Zabol by RAPD and disk diffusion method.

**Materials and Methods:** A total of 100 strains of *P. aeruginosa*, were originally isolated from a variety of clinical samples and were biochemically identified by conventional tests. The isolates were tested for their susceptibility to 6 antibiotics including imipenem (10µg), ciprofloxacin (5µg), ceftazidime (30µg), cefixime (5µg), tobramycin (10µg), piperacillin (100µg) by the Kirby-Bauer disk diffusion method. Amplified Polymorphic DNA (RAPD) primers were used to amplify genomic DNA samples from each isolate.

**Result:** Out of the 100 isolates of *P. aeruginosa*, 11%, 7%, 15%, 98%, 4% and 7% were resistant to imipenem, ciprofloxacin, ceftazidime, cefixime, piperacillin and tobramycin respectively. Random amplification of polymorphic DNA (RAPD) analysis of genomic DNA produced 80-5% of genetic similarity among isolates.

**Conclusion:** In present study, we found RAPD-PCR technique as a useful tool for investigation of the genetic variation among *P. aeruginosa* strains. The results could assist to screen for the original of infection caused by this organism with subsequent control of colonization and transmission.

**Keywords:** *Pseudomonas aeruginosa*, antibiotic resistance, RAPD

## Determination of Antibiotic Resistance Pattern of Microorganisms Isolated From Positive Blood Cultures at ICUs of Imam Khomeini Hospital during 2011-2013

### ABSTRACT

Nader aghakhani

**Introduction:** The increasing rate of antibiotic resistant bacteria in different wards of hospitals, especially in the intensive care unit and increased morbidity and mortality rates due to this bacterium, highlights the need for awareness of antibiotic resistance pattern. The aim of this study was determination of antibiotic resistance pattern of microorganisms isolated from positive blood cultures at ICUs of Imam Khomeini Hospital during 2011-2013.

**Materials:** This cross-sectional study was done from September\_ 2011 until March\_ 2013 in Imam Khomeini Hospital in Urmia and positive blood culture specimens of ICU patients sent to the laboratory. The evaluated cases were determined for resistance by DDA method. Type of bacteria and antibiogram results recorded in the testing sheets. Data was collected and then analyzed by SPSS software.

**Results:** Among all blood cultures were carried out in determined period, about 101 positive cases were reported. Among them 56 cases (55.4%) were male and 45 cases (44.6%) were women. Patients' age ranged from 13 to 94 and the average age of them was 57.8 with a standard deviation of 22.5. The most common Gram-positive bacteria that grow in blood cultures were Coagulase Negative Staphylococci (35.6%) and the most effective antibiotic was Vancomycin and the less effective antibiotics were Cefotaxime, Ceftizoxime, Tetracycline, Imipenem, Cefixime and Cephalexin. The most common Gram-negative bacteria isolated was E.coli (19.8%) and the most effective antibiotic for this microorganism were Ceftazidime and Tetracycline and the less effective antibiotics to this microorganism were Cephalexin, Nalidixic Acid and Norfloxacin.

**Conclusion:** The results of this study showed that there is significant resistance to the most antibiotics used commonly; perhaps one of reasons of this reality is massive and incorrect using of antibiotics. It should be noted that the precise determination of antibiotic resistance pattern requires further study with more samples in different therapeutic centers.

**Keywords:** antibiotic resistance- microorganism - blood culture

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## Determination of HTLV1 antibody frequency in pregnant women and detection of the virus in their newborns

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### ABSTRACT

**Introduction:** Human T lymphotropic virus Type 1 (HTLV1) is a member of retroviridae family which causes clinical disease in 5 percent of infected persons. One route of the virus transmission is mother to child transmission. Infection with HTLV1 in pregnant women is not associated with significant risk for her fetus, because in endemic countries, about 25 percent of children fed with seropositive mother's breast milk will be infected on the other hand, intrauterine transmission was shown in about 5 percent of children not fed with breast milk. HTLV1 is endemic in Mashhad, thus we decided that determine HTLV1 transmission rate from mother to fetus (this article) and to child (following articles) and then present a practical advice.

**Method:** Firstly, Anti-HTVL1 was detected was in pregnant women who gave birth at Omolbanin Hospital within 2 consecutive years by ELISA method. Proviral DNA was extracted from ELISA positive sampels and PCR was performed using two set of specific primers. Then the infection of HTLV was studied in neonate cord blood of the positive mothers by PCR.

**Results:** The total HTLV1 antibody seroprevalence was 1.5% (6.407) with ELISA that positivity was confirmed by PCR. HTLV1 was found in all of 6 (100%) cord blood specimen of the HTLV1 positive mothers by PCR that could reflect intrauterine transmission.

**Conclusion:** Our results showed that HTLV1 prevalence in Mashhad region is going to decrease and antenatal HTLV1 screening should not be routinely tested, and because all of seropositive mother's neonates were HTLV1 positive, there is no need to avoid or discontinue the breast milk.

**Key words:** Newborn infants, Human T- lymphotropic virus type 1, ELISA, Polymerase chain reaction





## ***E. coli* as Risk Factor Pathogen of Nosocomial Urinary Tract Infections**

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### **A B S T R A C T**

**Introduction:** Urinary tract infection (UTI) is the most commonly encountered hospital acquired infection and the major risk factor is urinary catheterization. Gram-negative bacilli are the most important cause of these infections. These bacteria are showing rising rates of resistance to current therapies. It was aimed to determine the UTI among in patients of hematology-oncology ward at Dr. Sheikh children's hospital, and to investigate risk factors determining pathogen type (*E. coli* vs. others) positivity among nosocomial UTIs.

**Methods:**

In a study performed for 6 months period in 2014, urinary specimens obtained from hospitalized children of hematology-oncology ward at Dr. Sheikh children's hospital, with documented culture proved nosocomial UTI. If microbial growth occurred, differential cultures and tests were performed to identify different bacterial strains.

**Results:**

During the study period, 191 urine samples were detected and 19 (9.94%) had positive culture for UTIs, among nosocomial UTI, microorganisms were isolated of infections the phrase of *E. coli* 12 (63.15%), *Enterococcus* and *Staphylococcus epidermidis* 2 (10.52%), *Streptococcus pneumoniae*, *Proteus mirabilis* and *Klebsiella* 1(5.2%).

**Conclusion:**

Our study showed that large numbers of Gram-negative bacteria causing nosocomial UTIs, especially *E. coli*. The reasons underlying the high prevalence of nosocomial UTIs, and a better understanding of the risk factors might lead to improved control of these infections.

**Keywords:** Urinary tract infection, *E. coli*, Nosocomial infection.

## Early Infections in Liver Transplant Recipients: A Prospective Study

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### ABSTRACT

**Introduction:** Infection remains as a major concern for liver transplant (LT) recipients, although precise information based on a prospective study is not widely available.

**Materials and Methods:** Total of 38 consecutive LT recipients were prospectively followed for the presence of infection, defined by CDC in Nemazi Hospital, Shiraz, southern Iran from October to November 2014.

**Results:** The mean age ( $\pm$  SD) of 38 LT recipients were 23 ( $\pm$  1.5) years old, ranged 1.5-56 and 63% were male. Of the 38 LT recipients, 14 (37%) developed infections (4 surgical wound infections, 4 urinary tract infections, 2 pre-transplant peritonitis, 1 gastroenteritis, 4 infections without localizing sites). The rate of infections was higher in patients younger than 18 years old (70%) ( $P=0.076$ ). Of the 14 patients who developed infections, 57% were male ( $P=0.55$ ). Of the 14 episodes, 1 (7%) had secondary bacteremia. The causative pathogens, including 2 episodes of polymicrobial infections, were 6 gram-positive cocci (1 *Staphylococcus epidermidis*, 5 *Enterococcus* spp.), and 8 gram-negative rods (4 *Enterobacteriaceae*, 1 *Pseudomonas aeruginosa*, *Acinetobacter baumannii* and 1 *Stenotrophomonas maltophilia*). Of the 38 patients, 8 (21%) were colonized with vancomycin-resistant enterococci (VRE). The rate of VRE colonization was 21% in patients with infection (21%), which was not significantly different from those without infection ( $P=0.96$ ).

**Conclusion:** Infections, especially surgical site ones with gram-negative rods has remained a major problem in early period after LT. Assessment of the associated risk factors is crucial in its further control.

**Keywords:** Liver Transplantation, Surgical Wound Infection, Infection, Urinary Tract Infections

## Effect of Preventive strategies on reducing the rate of respiratory infections in General ICU (Shafa Hospital, Kerman) (92-93)

### ABSTRACT

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**Introduction:** Nosocomial infections, especially respiratory infections in the ICU, are the major factors threatening the safety of patients and causing morbidity and mortality. Thus, prevention has special importance. The aim of this study was to determine the effectiveness of preventive strategies on reducing respiratory infections in General ICU of Shafa Hospital (92-93).

**Methods:** This study was a prospective study of the impact of preventive strategies on respiratory infections in 292 ICU patients. The data gathering method was used for patient seeking and control check list. The rate of respiratory infections in two 6-month periods before and after intervention and 3 months of care and control Measured and compared.

**Results:** The rate of respiratory infections in General ICU in the second half of the 92 to (50%) after the implementation of the strategy in the first half of 93 to (32%) in the quarter of control (23.9%) and significantly reduced. While the rate of compliance with preventive care increased by 40%.

**Conclusions.** The results of this study demonstrate the effectiveness of preventive strategies to reduce the incidence of nosocomial infections is. There are training programs, regulatory and procurement of equipment simultaneously, the greater the success of the project. The facilities offered by the use of written plans to apply preventive measures. In this study the possible contribution of each of the strategies in infection remains unclear.

**Keywords:** prevention strategies, ICU, VAP

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## Effect of combination of alcohol and betadine on inflammation of vascular access in hemodialysis patients

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### ABSTRACT

**Introduction:** Inflammation of the vascular access site causes infection, which is the second cause of death in hemodialysis patients. The aim of this study was to determine the effect of combination of alcohol and Betadine on inflammation of the vascular access in hemodialysis patients.

**Methods:** This Randomized Controlled Trial was conducted in July 2014 on 69 patients undergoing hemodialysis in Imam Reza and Montaserie hospitals in Mashhad. They were randomly allocated into two groups of control (31 patients) and combination of alcohol and Betadine (38 patients). In Intervention group, the vascular access site was disinfected with Betadine solution and alcohol with ratio of 2:1 by the researcher before starting dialysis. During the 12th session inflammation of the vascular access were evaluated by Nurses Association's criteria. Finally, data were analyzed by SPSS software version 11.

**Results:** Mean age in intervention group was  $46/8 \pm 16/6$  and in control group was  $54/4 \pm 1/6$ . According to mann-whitney test, mean severity of inflammation in intervention group ( $0/2 \pm 0/2$ ) were lower than the control group ( $1/1 \pm 0/4$ ) as inflammation in experimental group and control group had statistically significant difference ( $p < 0/05$ ).

**Conclusion:** The combination of alcohol and povidone iodine as a disinfectant is effective to reduce inflammation and infection in the vascular access in hemodialysis patients and nurses can use this antiseptic for them.

**Keywords:** Vascular access, Hemodialysis, Inflammation, Antiseptic

## Effect of Nebulised Eucalyptus on occurrence of Ventilator-Associated Pneumonia in Patients under Mechanical Ventilation

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### ABSTRACT

**Introduction:** Ventilator associated pneumonia (VAP) is a common nosocomial infection among patients admitted in ICUs. It results in prolonged intensive care unit (ICU) stay, excess healthcare costs and higher mortality and morbidity. This study was conducted to examine the effect of nebulized eucalyptus (NE) on VAP in ventilated patients.

**Materials and Methods:** We performed a randomized clinical trial study in three intensive care units of an educational hospital in Esfahan. Seventy intubated patients that likely required mechanical ventilation for more than 72 hours were selected through purposive sampling and randomly allocated into NE (n = 35) and Placebo (n = 35) groups. NE group received 4 ml (5%) eucalyptus in 6 ml normal saline (NS) every 8 h. Placebo group received only 10 ml NS in the same way. On extubation, VAP was diagnosed through modified clinical pulmonary infection score (MCPIS).

**Results:** VAP was found in 11 (31.4%) patients receiving NE and in 23 (65.7%) patients in the control group (P = 0.004).the median of duration of intubation in study population was  $9.4 \pm 3.75$  (3-14 day)(p=0/13).mean of age was  $56.8 \pm 16.53$  (18-65) (p=0/48).the most of underlying disease was hypertension.

**Conclusion:** Nebulised eucalyptus can reduce occurrence of ventilator-associated pneumonia in ventilated patients.

**Keywords:** Ventilator Associated Pneumonia, Endotracheal Tube, Eucalyptus, Nebulizer

## Epidemiology and microbiology of nosocomial infections in Kerman Afzalipour Hospital

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### ABSTRACT

**Introduction:** Nosocomial infections are an important cause of morbidity and mortality in hospitalized patients. In most instances these infections do not correctly diagnosed and thus they are underestimated. A prospective surveillance study was performed to examine the epidemiology and microbiology of nosocomial infection in Kerman Afzalipour hospital in 2014.

**Methods:** Nosocomial infection is defined according to the National Nosocomial Infection Surveillance System (NNIS) criteria. Infections rates and causal agents were collected during 2014 in Afzalipour hospital, Kerman university of Medical Sciences, Kerman, Iran.

**Results:** During a year period, 135 patients were diagnosed as nosocomial infection (85 with culture and 50 with clinical diagnosis). Most common nosocomial infection was ventilator and non ventilator associated pneumonia (50%). Overall, the most common agents were acinetobacter and kelebsiella with 25.82% and 10.59% respectively. Most common predisposing factor for nosocomial infection was tracheotomy (33%). Venus and urinary catheter were the second and third predisposing factor with 22.53% and 20% respectively.

**Conclusions:** however the incidence of nosocomial infection in our hospital is underestimated, device-related infections are high. Gram negative and antibiotics resistant agents such as acinetobacter and kelebsiella are the most common causes of nosocomial infection. We should exert continuous efforts for infection control.

**Keywords:** Epidemiology, microbiology, nosocomial infections Kerman

## Evaluation of the frequency distribution of non-adhesive virulence factors in carbapenemase producing *Acinetobacter baumannii* isolated from clinical samples in Kermanshah

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### ABSTRACT

**Introduction:** *Acinetobacter baumannii* is considered to be a gram-negative bacterium that can cause several different infections. Nowadays, the appearance of carbapenemase-producing *A. baumannii* has made the treatment process more difficult. The identification of virulence factors (VFs), such as non-adhesives in *A. baumannii*, helps to fight against related infections.

**Methods:** A total of 104 samples from teaching hospitals in Kermanshah, Iran, were collected during a 24 month period (2011-2013). Sample identification was first carried out by biochemical tests, and then their susceptibility to carbapenems was determined using the Kirby-Bauer method. In addition, the frequency of non-adhesive VFs in carbapenemase-producing isolates was determined by means of a PCR.

**Results:** There were 50 isolates that were identified as carbapenemase-producing *A. baumannii*. The PCR results showed; 40 isolates (80%) for *traT*, 17 isolates (34%) for *cvaC*, and 8 isolates (16%) for *iutA*, and these encode serum resistance, colicin V and aerobactin, respectively. No significant correlation was found between these three genes.

**Conclusions:** The mechanism of *A. baumannii* virulence has always been in question. The role of VFs has also been recognized in other gram-negative bacteria. According to the prevalence of *traT*, *cvaC* and *iutA*, as non-adhesive VFs, we can suggest that they could be the main mechanism of carbapenemase-producing *A. baumannii* pathogenesis, respectively.

**Keywords:** *Acinetobacter baumannii*, carbapenemase-producing, virulence factor, non-adhesive.



## Evaluation criteria Hepatitis B virus infection prevention strategies in the area of knowledge, attitude and preventive health behavior

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### ABSTRACT

**Introduction:** When a new scale is designing. Expected to follow the development processes, extensive information about the scale reached. The main aim this study was benchmarking to improve preventive strategies for hepatitis B virus infection in the area of knowledge, attitude and preventive health behavior.

**Methods:** Cross-sectional study, data collection instruments designed and assess the reliability & validity. In this study, health care workers 19 health centers and 16 Health sites as the cluster was studied For Questionnaire designing .Prime, the first list of 50 questions was prepared and to assess the validity, the internal consistency and reproducibility, Respectively ;was used the methods content validity ratio (CVR), content validity index (CVI) , test-retest reliability and alpha Cronbach coefficient.

**Results:** 5 items due; Poor content validity was rejected. Content validity index higher than 0.80, the alpha Cronbach coefficient for the scale total 83% is and for Subcategories among 0.81 to 0.86 and Weights extracted from exploratory factor analysis of the questionnaire, was 74% shared variance. As a result, the final questionnaire is reliable and repeatable (ICC= 0.896 and P <0.001)

**Conclusion:** According to these findings, the improvement Questionnaire infection-control criteria Hepatitis B virus is proper and usable in research activities.

**Keywords:** Infection Control, assess the scale, Credibility and Trust, Questionnaire, preventive health behaviors.

## Evaluation of Prevalence of nosocomial infections and related factors in beheshti hospital in Hamadan

### ABSTRACT

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**Introduction:** Nosocomial infections are one of the problems of the past and present centuries and are cause of the cost and expenditure to patients and health system. Therefore identification of incidence and related factors in hospital infections and prevention ways is especially important. The study aimed to investigate the prevalence and factors associated with nosocomial infections in the shahid Beheshti hospital in Hamadan during the 1392.

**Materials and Methods:** In this descriptive cross-sectional study, 249 cases of Nosocomial infections have been reported of patients admitted to the ICU, internal (lung, endocrinology, nephrology, gastroenterology, hematology) and dialysis wards during a year. Data were collected by check list contains information about age, sex, date of admission and discharge or death, cultures type, infection agent, diagnosis and aggressive action. Data analysis was performed with SPSS-16.

**Results:** Of 11047 patients during a year, 249 patients with a mean age of  $64.22 \pm 19.05$  years old and the mean duration of hospitalization of  $19.86 \pm 16.18$  days hospital infection were infected. That were 70.2% of men and 29.8% women. The incidence of infection was estimated at 2.7 %.The most common bacteria isolated as causative factors secondary was E.coli(21/9%), acintobacter (21/5%), Enterobacter (13/3% ) Respectively. The highest incidence is in the ICU (51%), lung ( 14/1%) respectively. The incidence of pneumonia 26.2% and urinary tract infections 22.1% were significantly more likely than other infections ( $p < 0/05$ ). Between age and length of stay and nosocomial infection rates were significantly correlated ( $p < 0/05$ ). But between sex and medical and hospital infection there was no significant.

**Conclusion:** Based on the findings of an increased length of stay in hospital and age, a high risk of nosocomial infection Therefore, it is recommended principles of prevention of infection by the medical team and the use of invasive procedures necessary, Proper hand washing, supervision authorities, controlled use of antibiotics. Prevalence of nosocomial infection was estimated that less than standard closer look at the proposed hospital infection reporting.

**Keywords:** Nosocomial infections, infection agent , hospitals.

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## Evaluation of Blood Stream Infection at Dr. Sheikh children's Hospital

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### ABSTRACT

#### Introduction

Urinary tract infection (UTI) is the most commonly encountered hospital acquired infection and the major risk factor is urinary catheterization. Gram-negative bacilli are the most important cause of these infections. These bacteria are showing rising rates of resistance to current therapies. It was aimed to determine the UTI among in patients of hematology-oncology ward at Dr. Sheikh children's hospital, and to investigate risk factors determining pathogen type (*E. coli* vs. others) positivity among nosocomial UTIs.

#### Methods:

In a study performed for 6 months period in 2014, urinary specimens obtained from hospitalized children of hematology-oncology ward at Dr. Sheikh children's hospital, with documented culture proved nosocomial UTI. If microbial growth occurred, differential cultures and tests were performed to identify different bacterial strains.

#### Results:

During the study period, 191 urine samples were detected and 19 (9.94%) had positive culture for UTIs, among nosocomial UTI, microorganisms were isolated of infections the phrase of *E. coli* 12 (63.15%), *Enterococcus* and *Staphylococcus epidermidis* 2 (10.52%), *Streptococcus pneumoniae*, *Proteus mirabilis* and *Klebsiella* 1(5.2%).

#### Conclusion:

Our study showed that large numbers of Gram-negative bacteria causing nosocomial UTIs, especially *E. coli*. The reasons underlying the high prevalence of nosocomial UTIs, and a better understanding of the risk factors might lead to improved control of these infections.

**Keywords:** Urinary tract infection, *E. coli*, Nosocomial infection.

## Evaluation of compliance the cases of infection control by NICU staff of Imam Reza Hospital, Mashhad

### ABSTRACT

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**Introduction:** Nosocomial infection is one of the most important problems in intensive care unit. Sometimes, it complicated up to 20% of the patients hospitalized in these sections and also, it increases the rate of mortality to more than 30%. Among the problems that these infections can cause is increased mortality, longer hospital stay and increased health care costs. In this study, we tried to evaluate the cases of observing the infection control by NICU staff to provide prevention in the future policies.

**Methods:** This cross-sectional study was performed on all NICU personnel of Mashhad Imam Reza Hospital (N=100) to measure the degree of compliance with infection control performed by them. These include: hand washing by staff before entering to the section, before contact with patient, after contact with patient, between two patients, after contact with the patient's body fluids, no ornaments, no long nails, nail varnish and observing the hygiene of personnel form such as shoes and a clean gown. After collecting data, it was analyzed by SPSS software (version 16) and indexes of central tendency and dispersion.

**Results:** Among 100 personnel, 23% were doctors, 23% nurse's assistant and 54% nurse. The steps of how controlling the infection in these sections indicates that totally, the cases of no hand washing between two patients were higher than other cases (48%) and the use of ornaments in the section was another problem with high frequency (29%). Nearly half of the physicians (47.8%) didn't performed hand washing after contact with the patients, and nearly half of the nurses and more than half of the nurse's assistants do not wash their hands between patients. No hands washing before entering the section was 12%, no hand washing before contact was 18%, and washing having ornaments such as watch, ring, long nails, and nail varnish was 29%.

**Conclusion:** Most cases of non-compliance with hand hygiene were related to no hand washing between patients (48%). Totally, compliance with hand hygiene in intensive care units is far from universal standards.

**Keywords:** NICU staff, infection control

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## Evaluation of Hand washing compliance rates in five positions in Medical and nursing staff in shahid Beheshti hospital in Hamadan

### ABSTRACT

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**Introduction:** The medical staff hand has maximum contact with the surface and patient's body and is the most important element in transfer and dissemination of bacteria in hospital. The aim of this study was to evaluate the compliance of hand hygiene in five positions in Medical and nursing staff in shahid Beheshti hospital in Hamadan in 1393.

**Materials and Methods:** In this descriptive cross-sectional study 5090 Hand Hygiene position in 12 Hospitalization and Outpatient ward staff on five position (Before patient contact, before aseptic action, after contact to discharges of patient, after patient contact, after contact with the environment) were evaluated. Variables included the amount of hand washing (With soap or alcohol-based cleansers), Occupational groups (physicians, nurses and nurse assistant), Shifts, ward, five position Hand Hygiene. The staff hand hygiene was assessed in doing daily tasks at defined positions to evaluation standard checklist hand washing as tool using direct observation. The entire ward was equipped with washing facilities with soap and alcohol-based cleansers. Data analysis was performed with SPSS-16.

**Results:** The findings of the study showed that from 5090 of cases in 2532 (49/7 %) there was hand hygiene compliance by staff. But in 2558 position (50/3%) did not observe hand hygiene. Hand washing compliance in employment rates between groups had significant differences So that the nurses in 2036 (40%), the nurse assistants in 1781 (35 %), and physicians' in 1348(26/5 %) position of the hand hygiene were compliance. Hand washing compliance rates between the various departments of the hospital also is proposing significant difference was observed ( $p < 0/05$ ). In the position defined in all sectors of soap with 29/4% alcohol-based detergents 20/3% was used.

**Conclusion:** The findings show a low sensitivity to the patient's medical team and the prevention of infection in patients sensitive to your situation is somewhat. Therefore, careful planning of hand hygiene by staff as an effective tool for the prevention of nosocomial infections is need and further study is recommended.

**Keywords:** Hand hygiene, nosocomial infections, Hospital staff.

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## Evaluation of hepatitis B immunity among hospital workers of Mashhad University of Medical Sciences

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### ABSTRACT

**Introduction:** Health care workers are at risk of hepatitis B infection and their immunization can protect the health of them and patients. The Hepatitis B vaccination and evaluation of antibody titer after 2 months is recommended by Center of Disease Control (CDC). This study was aimed to evaluate the level of immunity in hospital workers in Mashhad University of medical sciences during 2013-2014.

**Materials and Methods:** In this cross-sectional study, hospital workers in 3 hospitals of Mashhad University of medical sciences were evaluated by questionnaire and measuring Hepatitis B surface antibody (HBS-Ab). HBS-Ab titer was quantitatively measured using ELISA method. Data were analyzed by t- test and chi square in spss16 software.

**Results:** Of 311 cases, 236 (75.9%) were women and 75 (24.1%) were men. The mean of age and employment duration were  $29.7\pm 6.3$  and  $6.3\pm 1.2$  respectively. 286(92.2%) of cases had history of hepatitis B vaccination and 25(7.8%) had not been vaccinated. HBs-Ab evaluation after vaccination was done only in 245(78.8%) cases. There wasn't any significant relation between age and employment duration with hepatitis B vaccination.

**Conclusion:** The results of this study showed many of hospital workers haven't sufficient immunity against hepatitis B virus. It is suggested that pre-employment health evaluation and measuring HBS-Ab titer after vaccination should be performed for all of hospital workers.

**Keywords:** Vaccination, Hospital workers, Hepatitis B

## Evaluation of sepsis in newborns using BACTEC blood culture system in the first half of 1393 in Imam Reza Hospital, Mashhad

Seyede Negin Mousavi nejad

### ABSTRACT

**Introduction:** Premature newborns of neonatal intensive care unit due to invasive actions are very sensitive and susceptible to sepsis and in case of not being treated, they would suffer from serious problems on some of their organs such as kidneys, lungs, ears and the brain. Delaying in diagnosis and treatment could even cause neonatal mortality. A series of tests are necessary for thorough diagnosis. Now, there are number of infants without blood infection who are being treated with antibiotics which will cause decreased body resistance against infections in the future. This was a cross-sectional study that evaluated infant health condition during the first half of 1393 in Imam Reza Hospital, Mashhad. Due to the lack of rapid special tests for definite diagnosis of sepsis, infants who are suspicious to sepsis according to history and physical examination are now being treated that result in treating newborns who has not sepsis definitely. This study used more sensitive and rapid tests such as bactec blood culture system which caused positive outcomes such as decreasing psychological problems and reducing infant hospitalization costs. In addition, in the event of negative blood culture, antibiotics treatment could be disconnected with greater confidence. In order for a fluent action, it has been proposed that newborns divide in three groups of definite, probable and possible sepsis and special actions should be accomplished for each group which has been propounded in this article.

**Materials and Methods:** This was a cross-sectional study during the first half of 1393 in NICU ward of Imam Reza Hospital, Mashhad. Newborns with suspicious clinical signs were sampled and antibiotic treatment started immediately. For diagnosis all kind of tests including bactec blood culture system were used and according to tests results newborns suspicious to sepsis were divided into three groups of definite, probable and possible sepsis and in case of negative blood culture with regard to general appearance of newborn, antibiotic treatment were disconnected.

**Results:** From 370 hospitalized newborns, 65 (17.5%) had suspicious clinical signs for sepsis and were treated. The most common clinical sign was respiratory distress (5.34%). Prevalence of newborn sepsis in this study from 65 suspicious newborn was 11 newborns. From 11 case of positive blood culture, 5 cases were in definite sepsis group and 6 cases were in probable sepsis group.

**Keywords:** newborn sepsis, blood infection, bactec blood culture system

Mashhad University of medical science



## Evaluation of antibacterial effect of new imidazol derivatives against two important resistant pathogens in nosocomial infections "Staphylococcus aureus and Proteus vulgaris"

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### ABSTRACT

**Introduction:** *Staphylococcus aureus* and *Proteus vulgaris* are important pathogen in hospital infection that with development resistant to current antibiotics in these bacterial, for Protection of Public Health, detection and use of new antibacterial compound is Necessary. Imidazol derivatives are new and Strong antibacterial compound that we studied antibacterial effect of two new imidazol derivatives on *S.aureus* and *P. vulgaris* in this test.

**Materials and Methods:** Imidazol derivatives that were synthesized were prepared in DMSO. Disc diffusion method was used for the calculation of growth inhibition zone diameters. For control used nalidixic acid and gentamicine disk.

**Results:** Any of two derivatives hadn't inhibition effect on *S.aureus* also inhibition effect of derivative number 1 on *P. vulgaris* wasn't showed, but inhibition effect only of derivative number 2 was proved on *P. vulgaris* with  $17.6 \pm 0.1$  mm inhibition zone. In antibiogram test gentamicine had maximum inhibitory effects on *S.aureus* and *P. vulgaris* with  $17.3 \pm 0.1$  and  $19.4 \pm 0.2$  mm inhibition zone respectively.

**Conclusion:** Inhibition power of imidazol derivative number 2 on *P. vulgaris* was showed in our study and for detection detail of antibacterial effect of this derivative, more test in vivo is needed.

**Keywords:** nosocomial infections, effect, imidazole derivatives, *Staphylococcus aureus*, *Proteus vulgaris*.



## Factors affecting survival of intravenous catheters in children in a randomized clinical trial

### ABSTRACT

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**Introduction:** Intravenous catheter installation, are prone to infectious, thrombotic, and mechanical complications. This study aimed to investigate the possible causes of the persistence of intravenous catheters in children who were admitted in Imam Reza hospital, in Bojnurd, Iran.

**Materials and Methods:** This experimental study was conducted on 150 children admitted. Using a table of random numbers, eligible children into two groups: (a catheter fitted with a time limit of 72 hours and the other based solely on the replacement catheter complications) were assigned. The variables and complications were recorded by the research team. Data were analyzed using descriptive statistics, Cox regression and Log-rank test through SPSS19 software.

**Results:** During the study, 31 complications (20.7%) were occurred. Of those, 14 cases (9.3%) of occlusion, 14 cases (9.3%) of infiltration and 3 events (2%) of phlebitis were occurred. There were no cases of infection in the subjects. In this study the relationship between the investigated variables (sex, age, diagnosis, culture positivity of needle of catheter, duration time of catheter installation, the number of attempts to install a catheter, the catheter frequency used for the installation) and the occurrence of complications was not significant. The frequency of IV complications (only infiltration), in the intervention group was significantly more frequent than the control group; but in terms of complications incidence, there was no significant difference between two groups.

**Conclusion:** In this study, there was no association between the investigated variables and the incidence of catheter-related complications. The findings of this study have shown superior clinical indication method compared with routine catheter replacement. Therefore, we recommend this technique of IV installation, for children. Also we proposed more factors in the occurrence of catheter complications should be studied in the future research.

**Keywords:** Risk factors, Complications incidence, Survival of intravenous catheter

## Four-year study of health care-associated infections in mottahari hospital of urmia

### ABSTRACT

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**Introduction:** Health care-associated infections could cause increase in morbidity, mortality and costs, especially in developing countries. We decided to study the annual incidence in Mottahari hospital in Urmia University of medical science.

**Materials and Methods:** All hospitalized patients in the mottahari hospital wards were assessed and followed from October 2011 to December 2014. Data was prospectively collected according to standard protocols of the National Nosocomial Infections Surveillance System.

**Results:** A total of 0/5% of all hospitalized patients developed nosocomial infection duration of our study. The most frequent urinary tract infections (UTI) (28.6%), pneumonias (26.5%) bloodstream infections (14.1%) surgery site infection (15.3%) musculoskeletal infection (7.9%) intra abdominal abscess (7%).

**Conclusion:** These results emphasize the need for applying various infection control measures to prevent colonization of patients with noscomial resistant organisms and including strategies to limit the potential of sinks from acting as a source or reservoir for these microorganisms.

**Keywords:** nosocomial infection, health care-associated infections

## Frequency and antimicrobial susceptibility patterns of bacterial agents of pneumonia isolated from ICU hospitalized patients in Imam khomeini Hospital in Kermanshah, 2014

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### ABSTRACT

**Introduction:** ICU patients are at high risk for developing nosocomial infections. Pneumonia is one of the most common infections in these patients. In this study we aimed to assess the frequency and antimicrobial susceptibility patterns of bacterial agents of pneumonia isolated from ICU hospitalized patients in Imam khomeini Hospital in Kermanshah, 2014.

**Materials and Methods:** In this study, 83 lung discharge and trachea samples were assessed. They were cultured in TSB (Trypticase Soy Broth). The suspected samples were subsequently cultured on BA (Blood Agar), EMB (Eosin Methylene Blue Agar) and other specific media. Finally bacteria were identified using standard bacteriological methods. Antimicrobial susceptibility testing were done using disk diffusion method according CLSI criteria. Data analysis was performed using SPSS software.

**Results:** Of 83 samples cultured, 78 cases (94%) were positive for bacterial agents, comprised 48 cases (61.5%) isolated from men and 30 cases (38.5%) isolated from women. The most common bacteria isolated were *Klebsiella pneumonia* (47.5%), *Citrobacter spp* (25.6%), *Pseudomonas aeruginosa* (12.8%), *Staphylococcus epidermidis* (7.7%), *proteus spp* (3.8%) and *Entrobacter spp* (2.6%), respectively. The results of antimicrobial susceptibility testing showed the lowest resistance was against amikacin, imipenem and gentamycin and the highest resistance belonged to co-trimoxazole, cefixime and cephalixin, respectively.

**Conclusion:** Results of this study showed high frequency of pneumonia in ICU patients. It is necessary to use appropriate control measures to prevent of these infections. It is also important to use effective antibiotics based on results of antibiotic susceptibility testing.

**Keywords:** ICU, pneumonia, antimicrobial susceptibility testing

## Frequency assay of *bla*<sub>CTX-M</sub> and *bla*<sub>TEM</sub> genes in extended-spectrum $\beta$ -lactamases (ESBLs) producing *Escherichia coli* isolated from urine specimens

### ABSTRACT

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**Introduction:** The extended-spectrum  $\beta$ -lactamases (ESBLs) are the major problems in treatment of infections caused by bacteria harboring the genes (*bla*). *Escherichia coli* is the significant ESBLs-producing organism. The infection control requires epidemiological studies and prevalence survey of *bla* genes produced by the organisms. The present study was aimed to identify the ESBLs producing *E. coli* and to determine the frequency of *bla*<sub>CTX-M</sub>, *bla*<sub>TEM</sub> genes by multiplex PCR method.

**Materials and Methods:** The clinical isolates of *E. coli* were obtained from urine specimens of patients. The isolates were confirmed by cultivation on differential medium and identification based on biochemical tests. The antimicrobial susceptibility testing was performed to determine the resistance profile to cefotaxime, ceftazidime, ceftriaxone, cefpodoxime, and aztreonam by Kirby Bauer disk diffusion method to screen for ESBLs-producing isolates and were verified using the double disc (cephalosporin-clavulanic acid) diffusion method. The frequency of *bla*<sub>CTX-M</sub>, *bla*<sub>TEM</sub> genes in isolates were assayed by multiplex PCR amplification.

**Results:** A total of 52 isolates of *E. coli* were collected from urine specimens. The antibiotic resistance profiles to cefotaxime, ceftazidime, ceftriaxone, cefpodoxime, and aztreonam were determined 80.77%, 76.92%, 78.85%, 73.08%, and 88.46%, respectively. 44 out of 52 isolates were screened phenotypically for ESBL production. The multiplex PCR genotyping of isolates expressing the ESBL phenotype indicated that *bla*<sub>TEM</sub> and *bla*<sub>CTX-M</sub> were 38.63%, 47.72%, respectively and *bla*<sub>TEM</sub>-*bla*<sub>CTX-M</sub> were 30.76%.

**Conclusion:** : Due to the high prevalence of genes encoding ESBLs in clinical isolates of *E. coli* and increasing resistance to third-generation cephalosporins, it is recommended to identify ESBLs-producing bacteria and *bla* genes by molecular techniques, especially multiplex PCR as a rapid and reliable tool in epidemiological surveys.

**Keywords:** *bla*<sub>CTX-M</sub>, *bla*<sub>TEM</sub>, ESBL, *Escherichia coli*, Antibiotic resistances

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## Frequency of *Pseudomonas aeruginosa* in burn wound infections and their resistance to antibiotics

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### ABSTRACT

**Introduction:** *Pseudomonas aeruginosa* is an important pathogen which causes nosocomial infections in immunocompromised Patients, especially in hospitalized burn Patients. Antibiotic Resistance of *P. aeruginosa* remains a major problem in burn Patients. In recent times, it has emerged as a widespread Multi Drug Resistant (MDR) pathogen which requires antibiotic susceptibility testing on a regular as well as a periodic basis. The aim of this study was to determine the antibiotic resistance pattern among *Pseudomonas aeruginosa* strains isolated from patients with burn wound infections in Burn Unit of Emamerza Hospital Mashhad, Iran.

**Materials and Methods:** A retrospective cohort study was conducted, and all available wounds cultures of Burn victims admitted during a period of September 2012 to December 2014 were included. A total number of 299 microorganisms were isolated from burn wounds. Statistical analysis was done through SPSS Version 16.

**Results:** out of a total of 299 cultures in the burn center assessed, 39 (12.7 %) found to have *P. aeruginosa* in their isolates. Resistance rate to various antibiotics were as follows: Colistin (2.3 %), Imipenem (52.3 %), Meropenem (45.5%), Piperacillin (72.7 %), Gentamicin (77.3 %), Amikacin (84.1%). The most effective antibiotic was colistin with a resistance rate of 2.3 % and Sensitive rate of 93.2 %.

**Conclusion:** Colistin was the most sensitive agent and Amikacin was the most resistant agent against *P. aeruginosa* in our study. Optimization of using antimicrobial agents and control of infection is recommended to prevent the increasing population of drug resistant organisms in Burn Units.

**Keywords:** Antibiotic resistance, *Pseudomonas aeruginosa*, Burn, infections.

## Frequency of adhesive virulence factors in carbapenemase-producing *Acinetobacter baumannii* isolated from clinical samples in west of Iran

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### ABSTRACT

**Introduction:** *Acinetobacter baumannii* is a significant opportunistic pathogen which causes severe infections related to catheters and ventilator. Adhesive virulence factors (VFs) are effective in *Acinetobacter baumannii* adherence and pathogenicity. The aim of this study is to evaluate frequency of adhesive virulence factors in carbapenemase-producing *A.baumannii*.

**Methods:** In total, 104 *Acinetobacter baumannii* were collected from teaching hospitals of Kermanshah, Iran during March 2011 to March 2013. All the isolates were tested for antimicrobial susceptibility by Kirby-Bauer disk diffusion method. Carbapenemase-producing isolates were identified, DNA of isolates were extracted by boiling and were investigated for the presence of adhesive virulence factors by PCR. **Results:** Among 50 carbapenemase-producing isolates, frequency of *fimH* and *csgA* genes obtained 30(60%) and 27(54%), respectively. 20(40%) isolates carried both of *fimH* and *csgA* but 13(26%) carried none of these two genes. None of these isolates presented genes codifying for other different adhesive virulence factors include fimbriae Dr (*afa/draBC*), fimbriae S (*sfa/focDE*), fimbriae P (*pap*), capsule (*kpsMT*), fibronectin receptor (*fnb*). **Conclusions:** adhesive virulence factors are responsible for pathogenesis of bacteria. As adhesive VFs, fimbriae type I (*fimH*) and curli fiber (*csgA*) are participated in adherence and biofilm formation and give bacteria the ability to be hidden of host immune system and then causing infections. More than 50 % prevalence of *fimH* and *csgA* genes among 7 adhesive VFs studied in this research shows that maybe there is a significant relationship between the presence of *fimH* and *csgA* genes and *A.baumannii* infections.

**Keywords:** *Acinetobacter baumannii*, virulence factors, carbapenemase-producing, adhesive



## Genotyping of aminoglycoside resistance *Acinetobacter baumannii* in Imam Reza Hospital, Mashhad

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### ABSTRACT

**Introduction:** *Acinetobacter baumannii*, cause severe nosocomial infections, especially in intensive care units. Such infections have become difficult to treat as many strains are now resistant to multiple antibiotics, including aminoglycoside. Many factors influence the dissemination of antibiotic resistance gene. However, the rapid emergence of resistance to aminoglycosides in clinical isolates of this bacterium has been attributed to their ability to acquire resistance gene. The goal of the present study was to determine frequency of the important genes corresponding the aminoglycoside resistance in *A. Baumannii*.

**Materials and Methods:** Fifty-four *Acinetobacter Baumannii* isolate from Imam Reza hospital during October 2013 to March 2014 were studied. Resistance profile of isolate to different aminoglycoside antibiotics were determined by Kirby-bauer method. Extraction of DNA was done by boiling method. Detection of *aadA1*, *aadB*, *aacC1*, *adeB*, *aphA1* and *aphA6* was done by Polymerase Chain Reaction method. Genetic relationship of all isolates was determined by REP-PCR method.

**Results:** Out of 54 examined isolates, 90.7% (49) and 50% (27) were resistance to amikacin and gentamycin respectively. *adeB*, *aphA1*, *aphA6*, *aacC1*, *aadA1* and *aadB* was detected in 72% (39), 25.9% (14), 92.6% (50), 85.2% (46), 61.1% (33) and 29.6% (16), respectively. REP-PCR results showed that isolates were belonged to one genotype.

**Conclusion:** Based on the obtained results, rate of aminoglycoside resistance was high in *A. baumannii* isolates in the study region, which highlighted the necessity of considering preventive measures to control dissemination of these resistance genes.

**Keywords:** *Acinetobacter Baumannii*, Aminoglycoside resistance, PCR



## Hand hygiene compliance in surgical wards of a university-affiliated hospital in Mashhad, Iran

### ABSTRACT

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**Introduction:** Hand hygiene (HH) is the single most important element of strategies to prevent health care-associated infections; but compliance with recommended instructions is commonly poor. We attempted to promote HH by implementing a hospital-wide program, with special emphasis on bedside, alcohol-based hand disinfection.

**Methods:** We monitored the overall compliance with HH based on WHO guideline (my five moments for HH) during routine patient care in surgical wards of a teaching hospital in Mashhad, Iran, before and after implementation of a hand-hygiene program.

**Results:** Hand hygiene compliance in surgical wards of our hospital was 20.32% in 2012 and 45.45% in 2014.

**Conclusion:** Hand hygiene compliance was poor in 2012; but increased significantly after implementing hand-hygiene program.

**keyword:** Hand hygiene, surgical wards

## Health care associated infections and hand hygiene compliance in pediatric and neonatal ICU wards of Imam Reza hospital in two consecutive years

### ABSTRACT

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**Introduction:** Hand hygiene is simple but it is one of the most important ways to prevent health care associated infections in health care settings. Unfortunately hand hygiene compliance was low among health care workers.

**Materials and Methods:** Point prevalence study of health care associated infections based on CDC criteria was done in one day in pediatric and neonatal ICU wards of Imam Reza hospital Mashhad, Iran in two consequent years. All patients who admitted more than 24 hours enrolled in our study. Trained physicians and nurses reviewed files of all patients admitted in these wards. Standard questionnaires including clinical data, type of health care associated infections and prescribed antibiotics were filled. Point prevalence survey of health care associated infections was done in two consequent years. Also hand hygiene compliance was measured among health care workers in two consequent years.

**Results:** Twenty six (21%) health care associated infections were identified among 125 hospitalized patients of pediatric and neonatal ICU wards of Imam Reza hospital Mashhad, Iran during 2 days in two consequent years. Health care associated infections in pediatric and neonatal ICU wards were 16(27%) from 59 patients in year 91 and 10 (15%) from 66 patients in year 92. The most common health care associated infections were sepsis in both pediatric and neonatal ICU wards. Hand hygiene compliance among health care workers was 84% in year 91 and 70% in year 92.

**Conclusion:** Health care associated infections were common in pediatric and neonatal ICU wards. Hand hygiene compliance was high among health care workers during study period so other factors should be considered in developing nosocomial infections in these wards.

**Keywords:** Hand hygiene, Hospital-acquired infection, pediatric and neonatal

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## Impact of hand hygiene education in healthcare associated infection and mortality rates in neonatal intensive care unit

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### ABSTRACT

**Introduction:** The most important tool in any infection control program is good hand hygiene. Despite recognizing that hand hygiene is crucial in reducing infection rates, hand hygiene compliance remains suboptimal. This study was designed to determine hand hygiene compliance, before and after an educational intervention and its impact on hospital infection rates.

**Materials and Methods:** The study was done in neonatal intensive care unit of an educational hospital. All healthcare providers working in the unit at the time of study were trained on Importance of hand hygiene and methods of hand hygiene observation; after that hand washing compliance controlled by a physician during post intervention phase. Hand hygiene compliance, healthcare associated infection and mortality rates compare before and after educational intervention.

**Results:** Compliance of health-care workers for all hand hygiene opportunities combined was 30% before intervention and improved to 70% in post intervention. Infants in phase II had lower gestational age, lower birth weight with higher proportions of preterm and very low birth weight infants and longer length of stay. Cesarean section and Invasive procedure was higher in phase II. In post intervention phase, healthcare associated infection rates (5.4% to 1.7%  $p=0.000$ ) and mortality rates (14% to 9%  $p=.013$ ) decreased significantly as the hand hygiene compliance improved.

**Conclusions:** We have shown that a good control of hand hygiene compliance by physician after an educational program may have good effect in healthcare associated infections control in neonatal intensive care unit.

**Key Word:** Cross Infection; Education; Hand Hygiene; Infection Control; Newborn

## Impact of Zinc Supplementation in Children Aged 1-60 Months Admitted with Acute Diarrhea

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### ABSTRACT

**Introduction:** Acute diarrhea remains a major cause of morbidity and mortality among infants and young children as well as an important determinant of growth faltering in the world. Significant proportions of children who suffer from diarrhea are malnourished with depleted micronutrient stores. Diarrhea also leads to excess loss of micronutrients such as zinc and copper.

**Methods:** This study was a clinical trial. The samples were collected from the children admitted. Children were randomly assigned to zinc and control groups among which zinc group received 2 mg/kg of zinc supplementation daily. A questionnaire was utilized as the research instrument containing the demographic information as well as number of stools and duration of admission.

**Results:** After starting supplementation, the mean duration of diarrhea was  $3.7 \pm 0.95$  days in the zinc group and  $4.6 \pm 1.8$  days in the control group, showing a significant difference ( $P < 0.05$ ). The number of stools after starting zinc supplementation were  $6.2 \pm 3.6$  and  $6.8 \pm 4.1$  on the first day,  $4.3 \pm 2.9$  and  $4.6 \pm 2.9$  on the second day,  $2.5 \pm 1.8$  and  $3.3 \pm 2.4$  on the third day,  $2.2 \pm 1.1$  and  $2.7 \pm 2$  on the fourth day,  $2 \pm 1.4$  and  $2.6 \pm 1.8$  on the fifth day, and 0 and  $3.6 \pm 1.6$  on the sixth day in the zinc and control groups respectively. There was no significant difference in diarrhea severity in the treatment group ( $P > 0.05$ ) except on the sixth day.

**Conclusion:** Zinc supplementation reduces the duration of acute diarrhea in admitted 1-60 month old children but has no effects on severity of acute diarrhea except on the sixth day of diarrhea duration.

**Keywords:** Acute Diarrhea, Clinical Trial, Zinc Supplementation

## In vitro antibacterial activity of low-molecular-weight chitosan on planktonic growth and biofilm formation of *Pseudomonas aeruginosa* isolates

### ABSTRACT

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**Introduction:** An opportunistic, nosocomial pathogen of immune compromised individuals, *Pseudomonas aeruginosa* typically infects the airway, urinary tract, burns, wounds, and also causes other blood infections. One of the most worrisome characteristics of *P. aeruginosa* is its low antibiotic susceptibility. Some recent studies have shown phenotypic resistance associated to biofilm formation. Biofilms of *P. aeruginosa* can cause chronic opportunistic infections, which are a serious problem for medical care in industrialized societies, especially for immunocompromised patients and the elderly. They often cannot be treated effectively with traditional antibiotic therapy. As a result, novel therapeutic solutions other than the conventional antibiotic therapies are in urgent need. Chitosan is a polysaccharide biopolymer derived from chitin. The interaction between positively charged chitosan molecules and negatively charged microbial cell membranes results in provoking internal osmotic imbalances and consequently inhibiting the growth of microorganisms. This study presents the lowest concentration of chitosan that can inhibit the biofilm formation and planktonic growth of *Pseudomonas aeruginosa* isolates.

**Methods:** The antibacterial activity of low-molecular-weight chitosan with %75-85 deacetylation was investigated to determine the minimum inhibitory concentration (MIC) and minimum biofilm inhibitory concentration (MBIC) using broth micro-dilution method.

**Results:** Results showed that the lowest concentration MBIC of chitosan for 10 clinical isolates of *Pseudomonas aeruginosa* was 1-2 mg/ml and MIC was 0.031 - 0.5 mg/ml.

**Conclusion:** This study demonstrated the anti-adherence and antibacterial activity of low-molecular-weight chitosan on *Pseudomonas aeruginosa* isolates.

**Keyword:** Anti bacterial activity, chitosan, *Pseudomonas aeruginosa*, antibiotic resistant

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## Incidence and Susceptibility Testing of *Acinetobacter baumannii* Isolated from burn patients in mashhad,Iran

### ABSTRACT

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**Introduction:** Burn wound infection due to MDR Pathogens (*Pseudomona aeruginosa*, *Acinetobacter baumannii*, *Klebsiella spp*) poses a significant challenge in terms of systemic sepsis, graft loss, prolonged hospital stay and even increased mortality. Gram negative infection is a major determinant of morbidity and survival. Burn wound infections in different centers are caused by different sets of causative organisms. Antibiotic resistance of these organisms especially, *Acinetobacter* remain a major problem in burnt patients. The purpose of this study was to determine the antibiotic resistance pattern among *Acinetobacter* strains isolate form burn patients.

**Materials and Methods:** A retrospective study was conducted in Burn unit of Emam reza hospital in Mashhad, Iran. All available wound cultures and Susceptibility report of Burn victims admitted during 2 years period (2012 – 2014) were included. Statistical analysis was done through SPSS version 16.

**Results:** From total of 299 Cultures assessed in the burn center, 173 (56.4%) found to have *Acinetobacter baumannii* in their isolates. Resistance rate to various antibiotics were as Follow: Colistin (0.6%), Imipenem (96.2 %), Meropenem (97.5 %), cefepime (97.8%), Piperacillin (97.5%), Cotrimoxazol (91.8%), Ceftazidime (60.6%), Amikacin (93.4%), Ciprofloxacin (96.5%)

**Conclusion:** The most sensitive antibiotics in our setup was colistin (Sensitivity rate: 97.1 %) and the most resistant antibiotics were carbapenemes, Piperacillin and cefepime Restriction in the misuse of antibiotics on empirical basis, establishment of proper infection control measures, and supportive measures will help lower the incidence of infection.

**Keywords:** Antibiotic sensitivity, *Acinetobacter*, Burn infection

## Incidence of acquiring nosocomial infection in the intensive care unit, hamedan, Iran, 2013-2014

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### ABSTRACT

**Introduction:** Nosocomial infections are one of the problems in past centuries and now. It imposes heavy costs to the health system, increasing the duration of hospitalization and increased mortality and morbidity rates.

**Materials and Methods:** In this cross-sectional study population included patients admitted from April 2013 to March 2014 in intensive care unit (ICU) of shahid Beheshti hospital and sample were patients with nosocomial infection during the course. Data analyzed by SPSS 16 software using chi-square and T-TEST.

**Results:** Of patients admitted to the ICU martyr were 128 patients with nosocomial infection (incidence rate of 108 per 1,000 admissions) that 2/35 8/64% of males and females. Average age was  $67 \pm 9/23$  years. Pneumonia is the most common diagnosis code (76/6%) and the type of infection e.coli (5/12%), respectively. The most important medical interventions performed in patients with nosocomial infections: intravenous catheter (98/4%), urinary catheter (8/89%), endotracheal tube (2/81) and suction (4/66%) were reported.

**Conclusion:** Based on our findings, the incidence of nosocomial infection was much higher than the rate reported in the world. This difference may be real or due to accuracy of diagnosis and screening.

**Keywords:** Hospital, ICU, Nosocomial infection, Incidence

## Increase of Carbapenem-Resistant *Acinetobacter* spp. infection in Imam Reza hospital in Mashhad during 2013 to 2014

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### ABSTRACT

**Introduction:** *Acinetobacter* is frequently isolated in nosocomial infections, and is especially prevalent in intensive care units, where both sporadic cases and epidemic and endemic occurrences are common. Recently, alarm has been raised over the spread of drug resistance to carbapenem antibiotics among these coliforms, due to production of carbapenemases. Carbapenem-resistant *Acinetobacter* spp. has emerged as an important pathogen causing healthcare-associated infections around the world. The present study is aimed to investigate the epidemiology of Carbapenem-resistant *Acinetobacter* Spp. during 2013 – 2014 in Imam Reza hospital.

**Materials and Methods:** *Acinetobacter* spp. isolates were collected from different units of Imam Reza hospital in two years, January 2013 to December 2014. Detection of these bacteria was done based on morphological characteristics and biochemical tests. Antimicrobial resistance test for Imipenem and meropenem was conducted by disc diffusion method according to CLSI guideline recommendations. Data Analysis was conducted by using SPSS version 11.5.

**Results:** There was increase in the frequency of carbapenem resistant *Acinetobacter* spp. from 91.4 % in 2013 to 92.7% in 2014. Use of carbapenems antibiotics, was significantly correlated with the increase of carbapenem - resistant *Acinetobacter* spp.

**Conclusion:** We suggested that dedicated use of carbapenems would be an important intervention to control the increase of carbapenem - resistant *Acinetobacter* spp.

**Keywords:** *Acinetobacter*, Carbapenem, Resistant



## Infection Prevention during Blood Glucose Monitoring and Insulin Administration

### ABSTRACT

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**Introduction:** Monitoring of blood glucose levels is frequently performed to guide therapy for persons with diabetes. An underappreciated risk of blood glucose testing is the opportunity for exposure to blood borne viruses (hepatitis B, hepatitis C, and human immunodeficiency virus) through contaminated equipment. HBV is the most resilient of the three pathogens and can survive for up to a week on contaminated surfaces, it accounts for the majority of infectious outbreaks related to blood glucose monitoring and insulin administration. HVC can also be transmitted via contact with contaminated surfaces, but is most frequently spread by direct contact with the blood of an infected person, such as through needle stick injuries. HIV does not survive very long outside the body and is primarily spread to healthcare workers via sharps-related exposure, although the risk of such transmission is very low. Infection following needle stick exposure to contaminated blood occurs in an estimated 19% to 37% of exposures to HBV, 1.9% of exposures to HVC, and 0.32% of exposures to HIV. For prevention of infection finger stick devices or blood glucose meters should never be used for more than one person. Recommended practices for preventing blood borne pathogen transmission during blood glucose monitoring and insulin administration in Healthcare Settings are: Finger sticks devices and insulin pens should never be used for more than one person; blood glucose meters should be assigned to an individual person and not be shared; multiple-dose vials of insulin should be dedicated to a single person whenever possible; medication vials should always be entered with a new needle and new syringe; never reuse needles or syringes; perform hand hygiene (hand washing with soap and water or use of an alcohol-based hand rub and change gloves between patient contacts .

## Investigate the incidence of bloodstream infections (BSI) Hospitals Project INIS Covered Mashhad University of Medical Sciences in 1392

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### ABSTRACT

**Introduction:** Bloodstream infections responsible for 18% of mortality in intensive care unit. The infection increases with the duration of hospital stay (by 7 days) will cost a lot of patients and society. Most of central venous catheter-related bloodstream infections. The purpose of this Study of bloodstream infections in Hospitals Project INIS Mashhad University of Medical Sciences in 1392 is covered.

**Methods :** This descriptive study - Retrospective in the blood of patients with nosocomial infections in hospitals 8 Project ,have been recruited on the basis of software INIS Have been analyzed.

**Result:** In 1392 a total of 2375 patients with nosocomial infections in hospitals of 519 patients with bloodstream infections incidence 8/21 percent. The number of deaths due to infection, blood cultures were positive in 87 of the 41% of cases and 59% of clinically diagnosed. The incidence of infection was 58% in men and in women is 42%. 0-4 year age group with the highest incidence rates are 64.6%. The highest incidence of NICU By 5/38% reported the highest rate of death related to the ICU With 7/36%. The rate of Acinetobacter is 16%.

**Conclusion :** The most important way to reduce infections Blood disinfection Catheter, dressings and timely replacement of serum, preventing aseptic protection of and respect for the individual.

**Keyword :** Bloodstream infections, INIS, Mashhad

## Investigating the rate and the types of the cases of hospital infection appearance in the trauma intensive care units of Kerman in 1393

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### ABSTRACT

**Introduction:** The appearance of hospital infections can increase the death rate to two times since the rate of hospital infection. This study with the aim of investigation of the rate and the types of hospital infections appearance in the Kerman ICUs was conducted.

**Materials and Methods:** The criterion for entering the study will be being confined for at least 72 hours ICU and the criterion of exclusion will be existence of symptoms of infection at the beginning of admitting to the department two questionnaires; demographic features, probing hospital infections was used.

**Results:** The results indicated that 58% was caused by the bacteria of E-coli and in the patients of catter was detected in the bladder. In the patients having imposed on them tube inside trachea the infection was 4.2% and was caused by negative Estafilococos areos while in the surgery cutes up to 4.2% the factor of negative Estafilococos and Psodomonas was detected.

**Conclusion:** It was detected that the patients with urinate catter have gotten infection by frequency of 58%. The result indicated that the most common infection factor of urinate catter was E-coli so the careful installation and taking care of urinate catter during the treatment period is necessary

**Keywords:** The rate of appearance, Hospital infections, Intensive care unit

## Invitro anti-candidal effects of aqueous and methanolic extracts of Walnut (*Juglans regia*) tree Fruit Peel in comparison with fluconazole

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### ABSTRACT

**Introduction:** The appearance of fungal species resistant to antifungal drugs among *Candida*, Dermatophytes and *Cryptococcus neoformans* and also the numerous side effects of the antifungal drugs, convince the researchers to work on new therapeutic methods with minimal side effects for humans. The aim of this study is evaluation of anti-candidal activities of aqueous and methanolic extracts of walnut Fruit Peel on common *Candida* species.

**Materials and Methods:** In this study, the antifungal effects of aqueous and methanolic extracts of fruit peel of walnut (*Juglans regia*) were appointed and compared with fluconazole on four *Candida* species (*Candida albicans*, *Candida glabrata*, *Candida tropicalis* and *Candida krusei*) with Microdilution method. The tested fungal species were placed in media with different concentration of the plant extracts and antifungal drugs using the microdilution method and then the Minimum Inhibitory Concentration (MIC) and Minimum Fungicidal Concentration (MFC) of these extracts and antifungal drug were obtained for tested *Candida* species.

**Results:** Also both aqueous and methanolic extracts of fruit peel of walnut prevented fungal growth like fluconazole but the outcomes showed differences in MIC<sub>s</sub>. The MIC of fluconazole, aqueous and methanolic extracts of fruit peel of walnut for different *Candida* species were 0.001- 0.032, 6.25-50, 3.125-25 mg/ml, respectively.

The MFC<sub>s</sub> of fluconazole, and methanolic extracts of fruit peel of walnut were 0.001-0.032 and 6.25-25 mg/ml, respectively. The aqueous extracts of fruit peel of walnut were without fungicidal effects.

**Conclusion:** The most important result of this study is to show that fruit peel extracts of walnut are effective against named fungal species and it looks promising that in future, we can obtain some effective antifungal agents with minimal side effects from shallot extract.

**Keywords:** *Candida*, walnut (*Juglans regia*), aqueous and methanolic extracts

## Is viral screening necessary before cardiac catheterization of congenital heart diseases?

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### ABSTRACT

**Introduction:** Congenital Heart Disease (CHD) is an important health problem. Homodynamic catheters are widely reused mainly in developing countries where the costs of new devices are very high. Although viral serology is routinely screened prior to angiography, the significance of it is not clear. This study aims to evaluate the necessity of such screening in patients with congenital heart diseases.

**Materials and Methods:** In the present cross sectional study, 442 cases with congenital heart diseases that underwent cardiac catheterization in Imam Reza Hospital, Mashhad, Iran were enrolled. The viral markers of hepatitis B surface antigen and antibodies against hepatitis C, HIV and HTLV1, 2 were detected in all patients undergoing cardiac catheterization.

**Results:** From 442 patients with congenital heart diseases undergoing cardiac catheterization, 220 patients were female. The mean age was 7.8 years (six months to 39 years). The most frequent CHDs was VSD 37.1%, TOF 28.2%, PS 24.8%, PDA 21.7%, AS 11.0%, DORV 10.1%, AI 8.8% and less than 5% for other primary heart diseases. Screening of these patients showed that 6 (1.3%) of them were seropositive for HTLV1, 2, four (0.9%) for HBs Ag, four (0.9%) for HCV. None of the screened patients were HIV positive.

**Conclusion:** Positive viral tests were seen in few patients in this study. Therefore by appropriate precautions, cleaning and sterilization procedures these tests should be considered just for high risk patients.

**Keywords:** Congenital heart disease, Cardiac catheterization, viral immunologic study, children

Mashhad University of medical  
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## Isolation and identification bacteria from cockroaches of Ahvaz (sw of Iran) hospitals and determination of their susceptibility to antibiotics

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### ABSTRACT

**Introduction:** The cockroaches are known as carriers of pathogenic bacteria in the hospitals, but its role is not well documented regarding the carriage of antibiotic-resistant pathogenic bacteria in the hospitals of Ahvaz, Iran. The aim of this study was to determine the resistant bacteria isolated from the collected cockroaches of seven hospitals and one private clinic in Ahvaz.

**Materials and Methods:** The collected cockroaches of 7 hospitals and one private clinic were identified using Iranian cockroach key. All specimens were cultured to isolate the bacterial agents on blood agar and MacConky agar media. The microorganisms were identified using necessary differential and biochemical tests. Antimicrobial susceptibility tests were performed for isolated organisms by Kirby-Bauer's disk diffusion according to NCLI guideline, using the current antibiotics: Ampicillin, Ciprofloxacin, Chloramphenicol, Gentamicin, Tetracycline, Amikacin, Imipenem, Cefotaxime, Ceftazidime and Penicillin.

**Results:** Totally 76 cockroaches were identified as 4 species of *Periplaneta americana*, *Blattella germanica*, *Blatta orientalis* and *Supella longipalpa*. Isolated bacteria from alimentary ducts and external body surfaces of cockroaches were identified as *Enterobacter aerogenes*, *Klebsiella pneumoniae*, *Citrobacter freundii*, *Escherichia coli*, *Salmonella para A*, *Proteus mirabilis*, staphylococci coagulase negative, *Serratia marcescens*, *Staphylococcus aureus*, *Bacillus aureus* and *Bacillus* species. The pattern resistance rates were determined for gram negative bacilli and gram positive cocci regarding 10 antibiotics.

**Conclusion:** From the results of this study it is concluded that all the hospitals were infested with cockroaches and resistant bacteria. Therefore, the potential of removing these insects should be improved using cooperation between microbiologists and entomologists in the hospitals of Ahvaz.

**Keywords:** cockroach, antibiotic resistant bacteria, Ahvaz hospitals, Iran

## Microbial cause of Nosocomial infection in NICU of Mashhad Imam Reza hospital

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### ABSTRACT

**Introduction:** Sepsis is the most important cause of death in neonatal intensive care unit (NICU). Nosocomial infection has serious effect on mortality and morbidity. It occurs after 3 days of hospitalization. It can cause via blood, urine, cerebrospinal, IV line, etc.

**Materials and Methods:** In this study the Microbial cause of Nosocomial infection evaluated in NICU for 6 months since 1.1.1393. The data were collected from documents.

**Results:** Three hundred seventy one newborns were admitted in NICU during 6 months. Fifty nine (18.78%) patients got Nosocomial infection. The most cause of admission was prematurity and respiratory distress syndrome. 89.8% of patients were preterm and 64.4% were very low birth weight. In nosocomial sepsis 76.3% were sepsis culture negative and 23.7% culture positive. The most site positive culture were blood, ET tube, and urinary. The most common organisms were gram positive (64.3%) then gram negative (14.2%) and candida (21.5%). the most gram positive organisms were coagulase negative staphylococcus and enterococcus (each 21.5%), coagulase positive staphylococcus (14.5%) and other gram positive (7%). Pseudomonas and citrobacter were the most gram negative organisms (each 1 case).

**Conclusion:** As the gram positive organisms are prevalence in nosocomial infection in this hospital, hand washing should be added and appreciate the NICU staff for this processor.

**Keywords:** Microbial cause, Nosocomial infection, NICU

## Multidrug-Resistant among Gram-Negative Bacilli isolated from intensive care unit patients, Babol, Iran

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### ABSTRACT

**Introduction:** The prevalence of multidrug-resistant (MDR) bacteria is increasing through the world .MDR bacteria are common in patients at intensive-care unit (ICU). The present study was undertaken to determine the antibiotic resistance pattern of *Pseudomonas aeruginosa*, *Enterobacter cloacae* *Acinetobacter baumannii* and *Klebsiella pneumoniae* isolated from patients in the ICU

**Materials and Methods:** During 2012-2014, 30 isolated for each *P. aeruginosa*, *E. cloacae*, *A. baumannii* and *K. pneumoniae* were collected from the patients who acquired nosocomial infection after admission to ICU. Antibiotic susceptibility test was performed using five antibiotics by micro-dilution technique and was classified as sensitive, intermediate and resistant. Microorganisms are known as MDR those are resistant to at least three groups of antibiotics.

**Results:** According to the MIC findings, all bacteria were resistant to ceftazidim. The highest resistance rate to this antibiotic was observed for *A. baumannii* (96.7%) followed by *K. pneumoniae* (86.1%). *E. cloacae* had the lowest resistance rate (16.7%) to ceftazidim. Although, *P. aeruginosa* had noticeable resistance rate to ceftazidim (43.3%) but it had higher amount of resistance rate to amikacin (53.3%). Among these bacteria, the most prevalent MDR was *A. baumannii* 29 (96.6%) followed by *K. pneumoniae* 23(76.6%). No MDR isolates of *E. cloacae* was detected. The significant correlation was demonstrated between MDR bacteria and reason of hospitalization ( $p=0.004$ ).

**Conclusion:** According to our findings the resistance in gram negative bacilli was alarming. Continuous enforcement of policies to limit use of antimicrobial agent and active surveillance of antimicrobial resistance through a nationwide system are recommended.

**Keywords:** *P. aeruginosa*, *E. cloacae*, *A. baumannii*, *K. pneumoniae* , multidrug resistant bacteria, ICU



## National Nosocomial Infections Surveillance System in Iran During 2013

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### ABSTRACT

**Introduction:** Since 2007 the national nosocomial infection surveillance program was established in Iran in 100 general hospitals based on National Nosocomial Infection Surveillance (NNIS) system definitions for four main groups of infections including urinary tract , pulmonary, blood stream and surgical site infections and then have been increased to 394 general hospitals. This report is reflected the latest situation of mentioned surveillance system during 2013.

**Materials and Methods:** From selected 394 hospitals with more than 200 beds, the nosocomial infection data have been reported to nosocomial infection control department in Center for Communicable Disease Control during 2013 and analyzed those using SPSS.16 software.

**Results:** During the study period 5705470 patients were hospitalized in 394 hospitals. A total number of 60532 patients got nosocomial infection according to NNIS definitions. The infection rate in 394 hospitals was 1.06%. The infection among males and 15-65 years old age group was more prevalent. Urinary tract infections (UTI) was the most common infection (26.9%) among reported cases, followed by pneumonia (PNEU, 24.5%), surgical site infections (SSI, 15.2%), blood stream infections (BSI, 14.2%) and others 19.2%. In transplant ward UTI, burn ward BSI and intensive care unit ward pneumonia had high rate. The nosocomial infections in transplant ward was more prevalent, followed by burn, intensive care units, hematology and oncology, pulmonary and kidney wards respectively. Among positive cultures the E.coli, Acinetobacter, Klebsiella and pseudomonas were the most important etiologic agents. The overall mortality rate among patients affected by nosocomial infections during 2013 was 8%.

**Conclusion:** The nosocomial infection surveillance system in Iran is a new program and the main weak point of the mentioned program is under-reporting which need educational interventions to change attitude of health workers and encourage them to detect, register and report nosocomial infection ,thus authorities would be able to make evidence-based decisions.

**Keywords:** nosocomial infection

## Nosocomial Infections and Antibiotic Administration in Pediatric department, Imam Reza Hospital 2010 Mashhad Iran

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### ABSTRACT

**Introduction:** Background: Nosocomial Infections (NI) are a frequent and relevant problem, in other hands; those are responsible of mortality especially in pediatric ICU( Intensive Care Unit) and NICUs (Neonatal Intensive Care Unit) . Healthcare-associated infections are important in wide-ranging concern in the medical field. The most cause of Nosocomial infection include: bloodstream infection, urinary tract infection, pneumonia, and wound infection. The purpose of this study was to determine the epidemiology of the three most common NI in the Pediatric department.

**Materials and Methods:** We performed a prospective study in a single Pediatric department during 12 months. Children were assessed for 3 NI: wound infections, pneumonia and urinary tract infections (UTI), as the same method as Center of Disease Control criteria. All patients were followed up and individuals who had have NI and their treatment was entered in this study.

**Results:** In this study 811 patients were hospitalized that 60% of them were male and were older than 60 months. The main causes of hospitalization include: toxicity, seizure, respiratory infection and fever. Among them 15 cases had NI (1.87%). The most NI occurred in pICU and it was followed in aspect of intubation. The most cultured organism was pseudomonas that they suspected to ceftazidime and isolate from blood and endotracheal tube.

**Conclusion:** NI presence was associated with increased mortality and length of stay in hospital. This study highlights the importance of NIs in children admitted to a pediatric department especially PICU in a developing country. Clinical monitoring of NIs and bacterial resistance profiles are required in all pediatric units.

**Keywords:** Nosocomial infection, Pediatric department, Antibiotic

## Observance of sterility and sterility guidelines for operating room personnel, doctors and Students

### ABSTRACT

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**Introduction:** Hospital infections are among problems of the last century and wound infection is a common complication after surgery. Without a doubt, the most desirable method of infection control is prevention and surgical staff can prevent infection of the surgical site by following principles of sterile when washing their hands, wearing gowns and gloves during and after surgery.

**Materials and Methods:** This study is a cross-sectional study. Census method was used to select samples, that in this study, all operating room personnel were studied. The data collection tool is a list of two main parts consisting of questions in the field of infection control standards before, during and after surgery. After having been collected, the data were entered into SPSS software and after scoring each option chosen by people; the total score was calculated for each individual.

**Results:** Of the 120 participants, 79 (66%) were males and 41 were females. Age of participants was between 20 to 55 years and was between 1 and 26 years of experience. Most of them had 1 or 2 years of work experience and were university students (34%). The obtained scores in each area are as follows:

Within the field of preoperative measures, mean total score was 74.77 out of 100, regarding the field of activities related to the operation term, mean total score was 60.86 out of 100, regarding the field of activities related to after the operation term, mean total score was 61.66 out of 100.

**Conclusion:** The obtained results showed that the performance of the staff in infection control practice in teaching hospitals is not appropriate.

**Keywords:** operating room - staff - students- rules and guidelines

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## Positive culture in a tertiary PICU

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### ABSTRACT

**Introduction:** Patients in PICUs are more susceptible to develop infections because of underlying disease, exposure to invasive procedures such as endotracheal intubation and mechanical ventilation, invasive catheters and etc., immune suppressive therapy, TPN and malnutrition. The aim of this study was to describe positive culture in the PICU of the Imam Reza Hospital in Mashhad before and after infectious control strategy.

**Materials and Methods:** We compare positive culture per month in the PICU of the Imam Reza Hospital from 15 December to 15 February of 2015.

**Results:** Overall 28 patients were admitted during the first month in our PICU. There were nine positive cultures before infectious control strategy. Tracheobronchial positive culture was the most common (n= 4) with Klebsiella (25%), Acinetobacter (50%) and Pseudomonas (25%).

The second most common infections were positive blood and urine culture (n=2 for each of them). Serratia and Acinetobacter were detected from blood culture. Candida and Enterococcus were detected from urine culture. There was one positive peritoneal fluid culture of Pseudomonas. At the beginning of the second month we carried out infectious control strategies including education of hand hygiene, logout relation between adult and pediatric ICU and increase nurse-bed ratio. 30 patients were admitted during the second month. There were only two positive cultures of blood and peritoneal fluid from one patient in this period.

**Conclusion:** It is necessary to consider infectious control strategies to reduce the risk of positive culture in PICU.

**Keywords:** PICU/ Infection/ Positive culture/ prevention strategy.

## Prevalence of antibiotic consumption in surgical wards of a university-affiliated hospital in Mashhad, Iran

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### ABSTRACT

**Introduction:** The widespread and inappropriate use of broad-spectrum antibiotics in surgical prophylaxis has led to reduced treatment efficacy, increased healthcare costs, and antibiotic resistance. This study was aimed to evaluate the prevalence of antibiotic consumption in surgical wards of a teaching hospital.

**Methods:** The study was designed as a point prevalence survey measured at two points (16 Dec 2012 and 8 Jan 2014). All of the patients admitted >24h were studied. Patients admitted to the emergency rooms were excluded. Standardized data collection forms were filled by trained physicians and nurses.

**Results:** During the 2 point prevalence surveys, antibiotics were administered to 65.3% of patients. Although, only 6.9% of them had at least one documented HAI. The most common prescribed antibiotic in 2012 and 2014 was ceftriaxone (24.3%) and cefazolin (36.7%) respectively. The mean duration of antibiotic consumption was 2.44 days in 2012 and 2.5 in 2014 with maximum consumption of 30 days in both years.

**Conclusion:** Antibiotic consumption in surgical wards of this university-affiliated hospital was high; and ceftriaxone was one of the most inappropriately used antibiotics.

**keyword:** surgical wards, prophylaxis, prevalence

## Prevalence of Ceftriaxon-Sensitive Pneumococci Infection and Use of E-Test in Patients Admitted to Imam Reza and Ghaem Hospitals during 2012-2014

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### ABSTRACT

**Introduction:** The emergence of Penicillin resistance and multidrug-resistant pneumococcal strains is a global concern. Several reports have demonstrated a correlation between increased Minimal Inhibitory Concentration (MIC) of Penicillin, and increased MICs of Cephalosporins and other  $\beta$ -lactam antibiotics.

**Materials and Methods:** In this prospective study, during a two-year period from 2012 to 2014, different consecutive patients admitted to two educational hospitals in Mashhad, 35 strains of Pneumococci were isolated, 29 strains isolate from blood samples and 1 strain isolate from synovial fluid and 5 strains isolates from cerebrospinal fluid. The (MIC) of Ceftriaxone was determined, using E-test.

**Results:** Amongst 35 clinical isolates, evaluated in this study, none of them (0%) was resistant to Ceftriaxone and 3 isolates (8.6%) were intermediate and 32 isolates (91.4%) appeared to be sensitive to this antibiotic.

**Conclusion:** Considering the low rate of Ceftriaxone resistance amongst isolated pneumococci in this study, Only Ceftriaxone treatment of adult patients with invasive pneumococcal infections (other than CNS infections) is sufficient; but pediatric patients and patients with CNS infections should be treated with Ceftriaxone and Vancomycin. Apparently, diminution of Vancomycin use can be resulted in reduction of the resistance rate among other bacteria sensitive to this antimicrobial agent, such as Methicillin-resistant *Staphylococcus aureus* and Enterococci.

**Keywords:** Ceftriaxone, Pneumococci, E-Test.

## Prevalence of extended-spectrum beta-lactamase-producing *Shigella* species in children in Shiraz, Iran during August 2014--February 2015

### ABSTRACT

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**Introduction:** Shigellosis is one of the most common causes of gastroenteritis in children in developing countries. Increasing antimicrobial resistance of *Shigella* spp. has been reported worldwide, and the emergence of extended-spectrum beta-lactamases (ESBL) in *Shigella* imparting resistance to the third generation of cephalosporins has turned into a ubiquitous, growing concern. The aim of this study was to determine the antimicrobial resistance pattern in *Shigella* species isolated from children in Shiraz from August 2014 to February 2015.

**methods:** Thirty-nine clinical *Shigella* isolates (*S. flexneri*, n=34 and *S. sonnei*, n=5) were taken from children with bloody diarrhea. Antimicrobial susceptibility test was done using disc diffusion method. All *Shigella* isolates were screened for ESBL production employing combination disc method, which used cefotaxime and ceftazidime, together with discs to which clavulanic acid had been added.

**Results:** All the 39 *Shigella* isolates were resistant to ampicillin and at least another antibiotic. In addition, 74.4% were resistant to trimethoprim-sulfamethoxazole, and 12.8% to ciprofloxacin. Twenty-one (53.8%) of the isolates, namely 18 *S. flexneri* and 3 *S. sonnei*, showed an ESBL positive phenotype. All the isolates were sensitive to Meropenem.

**Conclusion:** We showed that the rate of ESBL producing *Shigella* is on the increase; the rates we found were far higher than those reported in other studies carried out either in Iran or elsewhere.

**Keywords:** ESBL, *Shigella* spp, Antibiotic resistance

## Prevalence of Extended-Spectrum $\beta$ -Lactamase-producing *Escherichia coli* in pediatric ward of Imam Reza hospital, Mashhad

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### ABSTRACT

**Introduction:** *Escherichia coli* expressing extended-spectrum  $\beta$ -lactamase (ESBL) are among the most multidrug-resistant pathogens in hospitals and are spreading worldwide. These phenotypes cause infections that produced in poor outcomes, reduced rates of clinical and microbiological responses, longer hospitalization, and high hospital expenses. In addition to the CDC guidelines, the medical staff and patients were asked to frequently gargle and wash their hands, and a private room was assigned to the patients infected with ESBL-producing bacteria. In this study, we evaluate prevalence of ESBL-producing *Escherichia coli* in pediatric ward.

**Materials and Methods:** *Escherichia coli* isolates were collected from pediatric ward of Imam Reza hospital and then were approved based on morphological characteristics and biochemical tests. Antimicrobial resistance test was conducted by disc diffusion method according to CLSI guideline recommendations. For detection of ESBL isolates the difference between susceptibility zone of ceftazidim and ceftazidim+clavulanic acid was measured. Data Analysis was conducted by using SPSS version 11.5.

**Results:** In this study ninety-nine *E. coli* isolate was evaluated. This study indicated that 31 isolates (31.3%) was ESBL.

**Conclusion:** It is necessary to screen patients because the number of those infected with ESBL-producing *E. coli* has seen an increase recently in the community. Our results indicate that it is necessary to carefully monitor patients to determine whether or not they are infected with ESBL-producing *E. coli*.

**Keywords:** *E. coli*, ESBL, Pediatric ward



## Prevalence of KPC among Klebsiella Pneumoniae Producing Carbapenemase in Clinical Isolates of Mashhad during 2014

### ABSTRACT

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**Introduction:** B-Lactamase-producing Klebsiella pneumoniae is an important cause of nosocomial infections and has caused major medical problem. The purpose of this study was to identify broad spectrum lactamase KPC-producing Klebsiella pneumoniae in clinical samples in Mashhad during 2014.

**Materials and Methods:** After identification by culture and biochemical methods, sensitivity of Klebsiella pneumoniae isolates was evaluated to 10 antibiotics using the disk diffusion method. We evaluate the presence of Carbapenemase KPC enzyme using modified Hodge test (MHT) which also confirmed by determining the minimum inhibitory concentration (MIC) agar screen method against meropenem.

**Results:** Antibiotic susceptibility pattern of the organisms were as follows: antibiotic resistance to ceftazidime + Clavulanic ceftazidime, gentamicin, nitrofurantoin, ciprofloxacin, trimethoprim-sulfamethoxazole, cefazolin, amikacin, imipenem, cefepime were respectively 45.19%, 36.65%, 41.63%, 31.67%, 35.23%, 46.26%, 54.44 %, 31.31%, 24.91%, 49.46% . Among these bacteria, 136 isolates were ESBL that further investigate by modified Hodge test. In this study from 136 ESBL isolates of Klebsiella pneumoniae, 20 isolate were positive by modified Hodge test. Then for positive MHT isolates we did agar screen, that 3 isolate were MIC=2, 2 isolate were MIC=4 and 15 isolate had MIC more than 8. All of these 15 isolates have KPC gene.

**Conclusion:** Overall, the survey results show that the emergence of new B-lactamase in Klebsiella pneumoniae plasmid particularly resistant to carbapenem antibiotic resistance in these bacteria is increasing.

**Keywords:** KPC, Klebsiella Pneumoniae, Carbapenemase, Mashhad

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## Prevalence of Nosocomial infection in NICU of Mashhad Imam Reza hospital

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### ABSTRACT

**Introduction:** Sepsis is the most important cause of death in neonatal intensive care unit (NICU). Nosocomial infection has serious effect on mortality and morbidity. It occurs after 3 days hospitalization. It can cause via blood, urine, cerebrospinal, IV line, etc. risk factors include prematurity, low birth weight, IV lines, ET tube, VP shunt and antibiotic usage. Nosocomial infections increase with low birth weight and low gestational age.

**Materials and Methods:** In this study the prevalence of Nosocomial infection evaluated in NICU for 6 months since 1.1.1393. The data were collected from documents.

**Results:** three hundred seventy one newborns were admitted in NICU during 6 months. Fifty nine (18.78%) patients got Nosocomial infection. The most common causes of admissions were prematurity and respiratory distress syndrome. 89.8% of patients were preterm and 64.4% were very low birth weight.

**Conclusion:** The prevalence of nosocomial infection in this hospital is the same as other Middle East countries. The most common cause of hospitalization was low birth weight.

**Keywords:** Prevalence, Nosocomial infection, NICU

## Prevalence of urinary tract infections (UTI) in hospitals host Mashhad University of Medical Sciences in 1392 INIS Covered

### ABSTRACT

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**Introduction:** The most common nosocomial infection (40%), urinary tract infections, urinary tract infections Longitude length of stay in the ICU with a direct relationship. The duration of catheterization, female patients, and the incidence of urinary tract infection with antibiotics prescribed first direct relationship. The aim of this study was to evaluate urinary tract infections in hospitals host INIS Covered Mashhad University of Medical Sciences in 1392, respectively.

**Materials and Methods:** This descriptive study - retrospective in which patients with urinary tract infection in 8 host hospitals in the study have been analyzed on the basis of software INIS.

**Results:** In 1392 a total of 2375 patients with nosocomial infections in hospitals 597 patients with urinary tract infection incidence 25/1 percent. The number of deaths due to urinary tract infections is 50.73/4% of positive cultures and 26/6% of clinically diagnosed. Infection in men 44/5% for women and 55/5%, respectively. Age group 65-15 years had the highest incidence rate of 56/7%. The incidence of infection in the ICU with a 34/3% have been reported and the most common cause of death in ICU with 54 percent. The pathogen infection, Candida rate of 17%.

**Conclusion:** The most important way to reduce urinary tract infections, proper use of a urinary catheter, aseptic and respect for personal protection is prevention.

**Keywords:** urinary tract infections, INIS, Mashhad

## Prevalence of Vancomycin resistant Enterococcus in Imam Reza hospital, Mashhad, during 2012-2014

### ABSTRACT

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**Introduction:** Vancomycin resistant Enterococcus (VRE) is one of the major agents of community-acquired and nosocomial infections. This bacteria is an epidemiologically important pathogen and contact precautions should be implemented in VRE colonized and infected patients. It can cause urinary tract, wound, and soft tissue infections. It is also associated with bacteremia which can lead to endocarditis in previously damaged cardiac valves. In this study we aimed to evaluate the VRE frequency at Imam Reza teaching hospital.

**Materials and Methods:** The blood and urine samples obtained were transported to the microbiology laboratory for selective culturing of VRE. All enterococci samples that were not sensitive to vancomycin were considered VRE. Antimicrobial susceptibility testing was performed on Müeller-Hinton Agar according to recommendations of the Clinical and Laboratory Standard Institute (CLSI 2012). Data Analysis was conducted by using SPSS version 11.5.

**Results:** During the study period, 53 blood sample and 210 urine sample were positive for enterococci. A total of 114 VRE-colonised isolates were obtained; including 29 (54.7%) that originated from blood sample and 85 (40.4%) urine samples.

**Conclusion:** Active surveillance and effective infection control policies are important controlling the spread of VRE in high risk hospital area.

**Keywords:** Enterococcus, Vancomycin resistant, Imam Reza hospital

## Prevalence study of extended-spectrum $\beta$ -lactamases *Klebsiella pneumoniae* in Imam Reza hospital, Mashhad

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### ABSTRACT

**Introduction:** *Klebsiella pneumoniae* is a successful opportunistic pathogen and has been associated with various ailments such as urinary tract infections, septicemia, respiratory tract infections and diarrhea. *K. pneumoniae* expressing extended-spectrum  $\beta$ -lactamase (ESBL) are among the most multidrug-resistant pathogens in hospitals and are spreading worldwide. The present study was conducted with an objective to examine the incidence of ESBL producing strains of *Klebsiella pneumoniae* recovered from Imam Reza hospital, Mashhad.

**Materials and Methods:** *Klebsiella pneumoniae* isolates were collected from various ward of Imam Reza hospital and then were approved based on morphological characteristics and biochemical tests. Antimicrobial resistance test was conduct by disc diffusion method according to CLSI guideline recommendations. For detection of ESBL isolates the difference between susceptibility zone of ceftazidim and ceftazidim/clavulanic acid was measured. Data Analysis was conducted by using SPSS version 11.5.

**Results:** During time of study, 100 (24.8%) of 403 *K. pneumoniae* isolates were resistant to ceftazidim and ceftazidim/clavulanic acid. There was a decrease in the frequency of ESBL *Klebsiella pneumoniae*, from 27 % in 2013 to 21.3% in 2014.

**Conclusion:** These results have some important epidemiological implications. This study indicates that the practice of infection control unit of the hospital was efficient.

**Keywords:** *Klebsiella pneumoniae*, ESBL

## Relationship between level of knowledge and practice of the medical staff of the psychiatric hospital infection control standards Ibn Syna and shhyd hashmynejad in Mashhad

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### ABSTRACT

**Introduction:** Nosocomial infections in health care has always been one of the major problems with the length of hospitalization increased morbidity, mortality and costs the hospital. Various measures for the prevention and control of nosocomial infections has historically been done Since health care plays an important role in the prevention of nosocomial infections that lead to functional recovery of patients are With due regard to the use of protective equipment during the disinfection of the skin, changing infusion sets, proper isolation of patients by type of care, use of standard precautions, hand hygiene, prevention of infection job injuries and anti septic accurately Equipment Consuming four 80% of nosocomial respiratory infections, wounds, blood, urine form.

**Materials and Methods:** This study was a cross-sectional study of 140 health care workers in the public hospital in Mashhad is a martyr Hasheminejad Vabn Sinai tools for data collection questionnaire based on the principles of infection control personnel necessary for the performance was monitored.

**Results:** Knowledge and practice of hand hygiene of medical personnel - Standard precautions 43.33%, 45.11%. How to use personal protective equipment 43.79%, 38.67. Isolation 98.58%, 35.94%, 47.4% . Use of disinfectants and antiseptic, 37.26%. Therapeutic measures and the scope of the patient (eg, central venous catheterization and urinary catheter) 28.5%, 36% . Care personnel against nosocomial infections 37.28%, 39.52%, 31.8%, four nosocomial infections%37.7 , %۳۹, ۰۲ is obtained .

**Conclusion:** The results of the study on the knowledge and practice of health care workers from infection control measures show Despite efforts by the authorities to improve the knowledge and practice of health care workers in hospitals require greater oversight functions Educational programs and personnel.

**Keywords:** Infection control . Nosocomial infections·Personnel

## Role of handwashing alarm in reducing of nosocomial infections in Emmam sajjad hospital of yasuj city

### ABSTRACT

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**Introduction:** Infectious diseases are one of the most important cause of morbidity and mortality in patients who admitted in hospital for any reasons and also handwashing is one of the simplest and cheapest and fast route for prevention of nosocomial infections. The aim of this study is determine role of handwashing alarm in reducing of nosocomial infections.

**Materials and methods:** This program has done in Emmam Sajjad hospital of Yasuj city since 2013 Oct - 2014 Oct. In this program all of health care workers must have handwashing in 8 AM, 14 PM, 20 PM with handwashing alarm with alcohol - base hand rub.

**Results:** This study shows that handwashing alarm in these times cause to reducing chance of nosocomial infections of pediatric ward that confirmed by culture and then diminish chance of morbidity and mortality of nosocomial infections.

**Conclusions:** Recent study shows that handwashing and specially handwashing alarm in hospital has very important role in reducing of nosocomial infections.

**Key word:** handwashing alarm- nosocomial infections - Emmam sajjad hospital- yasuj city

## Seroprevalence of Toxoplasmosis in Pregnant Women Admitted to the Health Centers of Iranshahr City, Iran

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### ABSTRACT

**Introduction:** Toxoplasmosis is one of the most widespread parasitic infections in humans that can cause abortion in pregnant women or serious damage to their fetuses. To determine the seroprevalence of toxoplasmosis in pregnant women of Iranshahr, a city in south east of Iran, a cross sectional study was performed by random cluster sampling of pregnant women admitted to rural and urban health centers of Iranshahr during 2011 to 2013.

**Materials and Methods:** After recording 423 volunteers' information in the questionnaires and preparation of the samples, prevalence of current/recent toxoplasmosis was evaluated by an enzyme-linked immunosorbent assay (ELISA) technique for the detection of toxoplasma-specific IgM, and previous history of infection by IgG.

**Results:** This study revealed that the IgG seroprevalence of toxoplasmosis in urban and rural pregnant women of Iranshahr was 26.2% and 42.7%, respectively; and that of IgM seroprevalence was 5.3% and 6.4%, respectively. However, IgG antibody levels increased with age ( $P < 0.002$ ). Education level of women was associated with the level of both antibodies ( $P < 0.01$ ). No statistically significant differences were observed in the levels of antibodies in relation to other study variables.

**Conclusion:** According to this study, 62% of the pregnant women were seronegative and consequently are susceptible to acute toxoplasmosis and subsequent injury to their fetuses. So because of the importance of toxoplasmosis in pregnant women, public health education is necessary for prevention of this serious opportunistic infection.

**Keywords:** IgG/ IgM / Pregnancy / Seroprevalence / Toxoplasmosis



## Short course treatment of neurobrucellosis

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### ABSTRACT

**Introduction:** Brucellosis is a chronic granulomatous infection and neurobrucellosis is a rare neurological complication of brucellosis. In this paper we present a series of patients with neurobrucellosis.

**Materials and Methods:** In a retrospective study, nineteen patients with neurobrucellosis, who were admitted at Shiraz University Hospitals within eight years period, were evaluated. Clinical manifestation, diagnosis, treatment and complications were assessed.

**Results:** The rate of neurobrucellosis among brucellosis patients was 8% (19 out of 235). The patients included fourteen men and five women with a mean age of 38.1 years. Headache, fever, fatigue, drowsiness and neck stiffness were the most common findings. Hearing loss, cerebellar ataxia, paraplegia, diplopia, photophobia, abnormal behavior, hyposthesia, and right side weakness were uncommon in our study. Cerebrospinal fluid (CSF) pleocytosis was detected in %100, high protein levels in %89 and low CSF glucose level in %52 of the patients. Eight (42%) patients received 8-14 weeks antibiotic therapy and improved acceptably without any sequela or relapse after two years follow up.

**Conclusion:** Clinicians in endemic areas should consider the likelihood of neurobrucellosis in patients with unexplained neurological and psychiatric symptoms. Neurobrucellosis may be managed with short course treatment.

**Keywords:** Neurobrucellosis, treatment, short course

## Situational analysis of nosocomial infections in neonatal intensive care unit of Ommolbanin hospital in Mashhad

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### ABSTRACT

**Introduction:** According to improvement in premature babies' survival rate in Iran's neonatal intensive care units, patient safety and the role of nosocomial infection become more important. The present study aims the current situation of nosocomial infection in NICU of Ommolbanin hospital in Mashhad.

**Materials and Methods:** The study population consisted of 18 newborns in the period from 01.03.2014 to 30.12.2014 in the neonatal intensive care unit, and nosocomial infection has been diagnosed for them by a neonatologist. Methods of data collection was based on questionnaire of national NICU infection surveillance system.

**Results:** Nosocomial infections had been diagnosed in 18 (2.88%) out of 623 admitted neonates. Mean birth weight in infected babies was 1713 g (840 gr  $\pm$ ). There was only one mortality among them. Only in 50% of cases there were a positive culture. Distribution pattern of positive cultures were Klebsiella 44%, staphylococcus coagulase-positive 33%, staphylococcus coagulase-negative 11% and gram-negative bacilli 11%. Microorganisms have been extracted from blood culture in 7 cases out of nine (78%).

**Conclusion:** Considering the fact that the most common extracted microorganisms was Klebsiella in Ommolbanin hospital NICU, authors suggest a change in imperial antibiotic therapy for a safer coverage of this microorganism.

**Keywords:** NICU, Nosocomial Infection, culture, Klebsiella

## Study and management of infectious complications in premature infants

### ABSTRACT

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**Introduction:** NICU is a critical ward in the hospitals and controlling the nosocomial infection in this ward is of great importance. Blood infection and septicemia are the most common nosocomial infections in infants.

**Materials and Methods:** A cross-sectional study was conducted from 1391 to Shahrivar 1392. Check lists containing demographic character questioner and hand hygiene monitoring questioner were filled by the staff. Population and cases overlap in this study. All the infants having the desired criteria were involved in this study. Criteria for being involved in the study were as following: infants within the ages of 30 days and less wi And prematurity and RDS and infants showing signs of infection after 48 hours of being hospitalized. Data were analyzed with descriptive statistics by Spss software and frequency tables were drawn.

**Results:** 42 cases were diagnosed as nosocomial infection of which 66.66% were male weighed less than 1.5 Kg. most of the cases were pre-term ( 88.09%) and 57.14% were natural child birth. It is indicated that the primary cause of hospitalization was prematurity (73.8%) and chronic respiratory diseases (7.14%). Isolated organisms from blood culture, urine culture, and eye were kelebsiela (33.32%), Staphylococcus(4.70%) and gram positive and gram negative cocci (2.38%). Educational measures were taken to inform staff and prevent infection.

**Conclusion:** Findings indicate the necessity of paying more attention to the causes and prevention of prematurity. Standard criteria must be met and proper measures must be taken to control and prevent the infection.

**Key words:** infection, NICU, Infants

## Study of Nosocomial infections status and related factors in hospitals Qom city, 2012

### ABSTRACT

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**Introduction: Background:** Nosocomial infections have always been one of the major health and therapeutic problems. And with increase length of staying in hospital cause the increase morbidity and mortality of these infections and also hospital costs. The aim of this study is determine the situation of noscomail infections and related factors with those infections in hospitals in the city of Qom.

**Materials and methods:** This study was carried out as a cross-sectional and descriptive study on all admitted patient(112316 cases) in hospitals in the city of Qom in 2012. Information collected via nosocomial infections care system of Iran.

**Results:**Incidence of nosocomial infections in all wards have been (902 case) and in wards of NICU(11 %) ,ICU(3/9%),burn(5/3%), internal(1.4%), PICU(1%) and in the other wards have been less than 0/5 percent. There is statistically significant difference between hospitalization wards and infections rate ( $P<0/001$ ).prevalence of nosocomial infections and the most of separated microorganisms are in sequence:Urinary infection (candidia and Ecoli 26/6), respiratory infections 25/4 %(( Sdvmvnaaeruginosa, KlebsiellaVasyntvbaktr), blood infections %9/4(Staphylococci), surgery infections 8/3 %( Enterobacter, Ecoli, Pseudomonas Sdvmvna) and other infections are 30/3%. The most invasive Proceedings that due to nosocomial infections are in sequence: Venous catheter(19/8%), Urinary catheter(15/9%),suction (13/2%), Endotracheal tube(12/2%), Ventilator(12/2%),surgery(8%), Tracheostomy(6/4%),venous nutrition(4%).

**Conclusion:** Prevention of morbidity from respiratory infections causes the decrease nosocomial infections burden and mortality.And more effects will be on elderly and child in ICU.

**Key words:** Incidence, Infections, Hospital, Qom

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## Study of pediculosis in Hendijan County (south west of Iran) towards Control and Eradication of this disease

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### ABSTRACT

**Introduction:** Discovery of the infested people with the *Pediculus capitis* (head lous) is one of the most important objectives of the health system. Following the screening of the community and identifying the problem, conducting a proper strategy to combat the disease through the treatment of patients and implementing suitable measures to prevent re-emergence of the disease is the first priority of health systems. For this reason the study of pediculosis was conducted through the years 2010 to 2012 in the Hendijan County.

**Materials and Methods:** The study was designed as a retrospective study. The used data were obtained from the stored demographic information of the referrals of health centre of Hendijan. In addition the above the outcome of the treatment was follow-up in the recorded patients.

**Results:** A total of 309 cases of Pediculosis were recorded through the years 2010 to 2012. All of them were infected with head lice. 95 percent were female and 67 percent were living in the city. The age group 6-10 years old showed the highest infestation. Also 39% of the cases were recorded in the Autumn. Overall, 84.7% of patients had not history of exposure with infection.

**Conclusion:** From the above results it can be concluded that health education in the girl schools should be targeted to prevent the Pediculosis. Teachers and students should learn practically how to check the hair regularly for *Pediculus capitis*(head lous). The treatment of belonging and washing hair with head lice shampoo should recommended toward taking care themselves. Follow up the positive cases should be done to reach the eradication of the problem.

**Keywords:** Pediculosis, Hendijan, student, girl. *Pediculus*, *capitis*, Head lous

## Study of prevalence, distribution and determination of antibiotic resistance to pathogenic strains isolated from gown of nurses of Afzali pour teaching Hospital, Kerman, 1390

### ABSTRACT

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**Introduction:** Nosocomial infection defined as an infection developed in the time of hospitalization and patient acquired infectious agent from hospital. Also, infections that staff acquired from hospital called nosocomial infection. All people who are in direct contact with patient have responsibility to prevent nosocomial infections; nurses due to the most contact with patients have the most role. The aim of this study was to determine prevalence, distribution and antibiotic resistance to pathogenic strains isolated from gown of nurses of Afzali pour teaching Hospital in 1390 in Kerman.

**Materials and Methods:** In this cross-sectional study, 3 sampling were performed in different days in morning shift from front and cuffs of gown of nurses in Afzali pour hospital in 1390. Isolated pathogens from gown of nurses were cultured and data collected after antibiogram test based on disk diffusion and were analyzed using Chi square test.

**Results:** From isolated pathogens from front of the gown the most prevalent was bacillus (28.6%) and the least was micrococcus (1.4%) and from cuffs the most prevalent was bacillus (30%) and the least was E.coli (1.4%). The most sensitive strain to used antibiotics was acinetobacter (86%) and the least resistant was E.coli (60%).

**Conclusion:** The most frequent pathogen was bacillus bacteria and the least was micrococcus and E.coli in gown of nurses of Afzali pour hospital. Also, the most resistant was acinetobacter and the most sensitive was micrococcus and E.coli.

**Keywords:** nosocomial infection, pathogen, gown, antibiogram, bacillus, E.coli, antibiotic resistance

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## Study the prevalence and causes of occupational contact with sharp objects and patient's secretions among the staff of Shafa hospital in Semnan in 1393

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### ABSTRACT

**Introduction:** Injuries with sharp objects and patient's secretions is an important occupational risk in healthcare staff which makes them vulnerable to HIV, Hepatitis B and C. Determining the prevalence and causes of such injuries can help taking the appropriate measures to decrease such injuries. The aim of this study was to determine the prevalence and causes of occupational contact with sharp objects and patient's secretions.

**Materials and Methods:** In a cross-sectional study 237 hospital staff who were in high risk of occupational contact with blood or patient's secretions were studied. A questionnaire which was approved by the faculty member of mazandaran university was given to the staff. Data were analyzed using Spss 17, descriptive statistics, k2 test, and T test.

**Results:** Nurses were mostly injured ( 38.63%) and needles were the most harmful objects( 54.54%), and most of the injuries were occurred in operation rooms( 31.81%). Being in hurry as a result of high work load was the main cause of injuries and low risk of infection at the site of injury was the main reason of not reporting the injury( 54.54%). Fortunately 97.72% of staff were vaccinated against Hepatitis.

**Conclusion:** The risk of occupational injuries with sharp objects and blood borne infections could be decreased by proper management of occupational contact, and reporting could be increased.

**Key words:** infection, NICU, Infants

## Study the risk factors and bacterial etiologies of nosocomial infections in the ICU of Ayatollah Musavi hospital

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### ABSTRACT

**Introduction:** Nosocomial infections increases the mortality rate and length of hospitalization and should be considered as a detrimental factor in human health. Such infections are resistant to treatment and sometimes lead to death. The aim of this study is to determine the risk factors and bacterial resistance in nosocomial infections in ICU.

**Materials and Methods:** In a cross-sectional study patients who were hospitalized in Ayatollah Musavi hospital during Farvardin to Esfand 1392. Patients who were hospitalized without any signs of infection and showed signs of infection 24-48 hours later were studied. Data were analyzed using descriptive statistics and.....

**Results:** During this one year, 597 patients were hospitalized in AICU of which 77 patients (13%) acquired nosocomial infection of which 42.9% were respiratory infection. Most of the infected patients were over 70 years. 66.2% were male. Most of the cases were hospitalized because of MPT. The patients were hospitalized an average of 27.45 days. 80.5 of patients required surgery during hospitalization. Invasive operations were done for all infected patients of which 68.83 % were intubated and were attached to ventilation. 44.2% of infected patients died. 17.3% of infections were because of E.coli.

**Conclusion:** Results showed that respiratory infection, using suction, intubation, and ventilator were of high risk and E.coli was the commonest organism observed in nosocomial infection.

**Keywords:** nosocomial infection, ICU, bacterial infection



## Survey of resistance and sensitivity pattern of antibiotic in bacteria from hospitalized patients inburning center

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### ABSTRACT

**Introduction:** Nowadays the major challenge for burn team is nosocomial infections in burn patients, which is known to cause over 50% of burn deaths. This pathogen agent according to its virulence abilities is the main aim of treatment in burn patients. Due to the different capability of this bacteria like its intrinsic resistance to multiple antimicrobial agents and the ability to develop high-level (acquired) multidrug resistance during antibiotic therapy make this an important challenge in antibacterial treatment. In this study we pointed our aim to AntibioticResistance pattern of Microorganisms Isolated From Burn Wound.

**Materials and Methods:** Total of 70 samples were collected from burned patients wounds hospitalized at hospital (2012-2013). Isolates were first defined with standard microbiological tests. Antibiotic susceptibility tests (AST) were performed on isolates with standard disc diffusion recommended by CLSI protocol. Determination of antibiotic resistance was done by using disc diffusion or Kirby Bauer using these antibiotics: co-trimoxazole, vancomycin, ciprofloxacin, cephalothin, ceftazidime, amoxicillin, amikacin, gentamicin, chloramphenicol, cefazolin, cefotaxime, ceftriaxone, ampicillin, oxacillin, and imipenem.

**Results:** Between different infectious agents isolated, *P. aeruginosa* was the most prevalent microorganism on burn patients wounds. The results of the Antibiotic resistance of *Pseudomonas aeruginosa* are as follows: amoxicillin 94.73%, amikacin 25.64%, gentamicin 30.77%, co-trimoxazole 84.62%, ciprofloxacin 48.72%, ceftazidime 51.28%, cefotaxime 58.97%, Chloramphenicol 86.84%, ceftriaxone 55.26%, and imipenem 50%.

**Conclusion:** Despite significant improvement in the survival of burn patients, infectious complications continue to be the major cause of morbidity and mortality in this group of patients.

**Keywords:** Microorganisms, AntibioticResistance, Infection

## Survey of urinary tract infection in catheterized patients admitted in Tabriz Children Hospital

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### ABSTRACT

**Introduction:** Urinary tract infections are common and include 15 percent of nosocomial infections. Majority of these infections results from using medical instruments in urinary system. 80% of these infections results from using urinary catheters. 10-20% of patients with short term urinary catheter had bacteremia and only 2% of them had symptomatic urinary tract infection. These infections resulted in morbidity and mortality in children's and newborns.

**Materials and Methods:** This study was a descriptive and cross-sectional survey. In 2014 information of all admitted patients with urinary catheter gathered based on national nosocomial infection surveillance system and analyzed by SPSS.

**Results:** In this period 34 cases of urinary tract infection were detected. 64.7% of patients were male and 35.3 were female. Among the infected patients 94.1% had urinary catheter 44.1% of patients admitted in PICU. NICU (32.4%) oncology (8.8%), Neonatal ward (5.9%) were the other important ward's respectively. The incidence of catheter associated urinary tract infection was 14.2 catheter- days. Candida (61.8) , E.Coli (14.7), pseudomona auroginosa (11.8), Klebsiella (5.9%) were most common isolated organisms respectively. 55.8% of isolated yeasts were from patients admitted in intensive care units. Majority of gram negative bacilli were resistant to third generation Cephalosporins and Nalidixic acid and were sensitive to Imipenem and Nitrofurantion.

**Conclusion:** According to studies fungal infections are among the most common causes of urinary tract infections in admitted patients. In this study based on prevalence of funguria especially in intensive care units, considering the aseptic techniques in catheterization, indication of catheterization and early removal of catheter were emphasized.

**Keywords:** Nosocomial Infection, Catheter associated urinary tract infection, URINARY catheter

## The Effect of Empowerment Program to Caregivers of Children with Cancer Undergoing Chemotherapy on Their Adherence to Preventive Health Recommendations Oral Ulcer

### ABSTRACT

Elahi asgarabad Hamideh<sup>1</sup>, Behnam vashani Hamidereza<sup>2</sup>

**Introduction:** Mucositis is one of the most debilitating side effects of chemotherapy. Approximately, 52% to 81% of children undergoing chemotherapy being affected side effects. Therefore, we must found solutions for control it. This study aimed to effect of Empowerment program to caregivers of children with cancer Undergoing Chemotherapy on their adherence to preventive health recommendations mouth ulcers.

**Method:** 60 children aged 1 to 18 years old undergoing chemotherapy in Sheikh Hospital in Mashhad in 2013 allocated randomly into two groups; Intervention and control in this clinical trial. In Intervention group, the necessary care based on clinical guideline developed by oncologists and special nurses was conducted, and cryotherapy was performed in one group. Mucositis was scored by Eilers and WHO scales. The empowerment program was composed of 4 steps: discovering reality, critical reflection, taking Charge, and holding. The program was developed and based on the Process of empowerment as conceptualized by Gibson's theory Data analysis was accomplished using independent and paired t, correlation coefficient and Mann-Whitney tests.

**Results:** In terms of the proportion of cancer patients, acute lymphoblastic leukemia, acute Myeloblastic leukemia, lymphoma, sarcoma and rhabdomyosarcoma, respectively 56/7, 13/3, 10, 6/7, 3/3, 20% of patients had. %61/7 of males and %38/3 were female. The mean age of the patients studied  $5/6 \pm 3/23$  years and the average age caregiver for the  $32/1 \pm 8/08$  was. Average Impact of Health Education Program recommendations for the prevention of mouth ulcers is  $14/2 \pm 21/4$  and empowerment program on compliance has a significant impact on carers intervention group ( $p < 0/001$ ). And the incidence of mouth ulcers intervention group compared to the control indicates significant differences ( $p < 0/001$ ).

**Conclusion:** Empowerment program for caregiver's children with cancer undergoing Chemotherapy increased their adherence to treatment and reduce the incidence of oral ulcers in children.

**Keywords:** Oral ulcer, Chemotherapy, Child, Empowerment, Caregivers

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## The effect of hand's washing about of the “Staphylococcus aureus “colony count’s bacteria, from the human’s samples. (The mental retarded students age of 6-7)

### ABSTRACT

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**Introduction:** It is worthy of a considerable that, to observance of individual hygiene, is very important for prevention of the infectious diseases (Herbert A. et al 1990). About of the contagion disease , for example :infected Sour –throat ,which causing the child in primary school to be infected and useless of the time of study ,and on the other hand the incorrect of consume of drugs, cause the later illnesses, for example the heart deficit or kidney. (Anna V. et al 2002). The basic aim of this intervention means to wash the hands for many times, with simple antibacterial solution, for decrease of those events.

**Method:** With the control of the hygienic teacher of school, and the control of hand’s washing of the students, with simple antibacterial solution , and so to sampling in random form in four time , and from forth of the hands , and preparation the plantation of the samples in the plates and supply the colony counts bacteria.

**Results:** With the uses of Anova .Analyses, in comparison of the control group (washing without regular way), and the experimental group, the counting of the colonies was very mention and more exces ( $P<0.001$ ).And the probability of their sorethroat, was more too ( $P<0.05$ ).

**Key words:** colony count-primary school-child-hand, swashing-infected sick

## The Effect of Massage on Sepsis of Hospitalized Preterm Infants in NICU

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### ABSTRACT

**Introduction:** Iran is one of the regions with high incidence of premature births, accounting for 10% of newborns. An important factor for the survival chance of the neonate is age. The Aim of this study was to investigate the effect of massage on complications of premature infants in the neonatal intensive care unit (NICU) of Ghaem Hospital in Mashhad.

**Materials and Methods:** This study was conducted on 60 stable preterm newborns. Intervention was included passive massage movements on members and a daily intervention for three periods of fifteen minutes in 3 hours until 5 days. 30 newborns in an intervention group (mean gestational age of 32.8 weeks and mean birth weight of 1525.5gm g) were compared with 30 newborns in the control group (mean gestational age of 31.6 weeks and mean birth weight 1321 gm).

**Results:** The study showed that the sepsis in experimental group was less than the control group but it was not statistically significant ( $P= 0/548$ ).

**Conclusion:** Our findings show that massage is an effective method for reducing the sepsis in stable premature infants.

**Keywords:** Preterm infant, massage therapy, sepsis

## The Etiology of Bronchiectasis in Iran: A Cross-Sectional Study

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### ABSTRACT

**Introduction:** Although thanks to vaccinations and antibiotics, the incidence of bronchiectasis has decreased in developed countries, bronchiectasis remains as a cause of chronic respiratory failure in developing countries. Since there is no accurate estimate of the etiology of the disease, this study conducted to determine the most important cause of bronchiectasis in the Iranian society.

**Materials and Methods:** This cross-sectional study used the information of patients admitted to two subspecialty lung hospitals where a wide range of bronchiectasis patients from around the country referred in ۲۰۱۳-2014. The inclusion criteria were: patients referred with the manifestation of chronic productive cough who had not responded to conventional treatment, in whose evidence of bronchodilation was observed in c-HRCT.

**Results:** The etiology of bronchiectasis was diagnosed in 73 of 91 patients (42 men and 49 women; 80.2%). The most important of them were cystic fibrosis, post infectious (severe pneumonia) and primary ciliary dyskinesia. The most common causes of bronchiectasis in children (Age $\leq$ 18 yr) were cystic fibrosis, Allergic Bronchopulmonary Aspergilliosis (ABPA) and Primary ciliary dyskinesia (PCD), respectively. In adults (Age $>$ 18 yr), the most common causes were post infectious (severe pneumonia), Primary ciliary dyskinesia (PCD) and cystic fibrosis, respectively.

**Conclusion:** Main causes of bronchiectasis in this study were not significantly different from other studies. It seems that preventative approaches as well as proper vaccination, proper treatment of pneumonia and its complications, good clinical performance based on a diagnostic algorithm along with clinical suspicion play an important role in controlling bronchiectasis and improvement of patient care in our society.

**Keywords:** Bronchiectasis, Cystic fibrosis, Pneumonia, Primary ciliary dyskinesia (PCD), Iran.

## The importance of hand hygiene in prevention of nosocomial infections

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### ABSTRACT

**Introduction:** Hand hygiene is one of the easiest, most effective and most cost effective ways of preventing antibacterial resistance. Handwashing ,helps removing the organisms acquired from patients or environment and preventing the development of infection cycle, is known as an important principle in infection control. However, in most healthcare centers hand washing is not in a satisfactory condition( between 5-40% and rarely more than 40%). In intensive care units, it is observed that less than 50% of staff follow thw standard hand washing rules. It is estimated that a two-fold increase in the hand washing rates will decrease the nosocomial infection by 25-50%.

**Materials and Methods:** Therefore, due to the importance of hand hygiene as the most important way of preventing nosocomial infections, we decided to study hand hygiene condition in the staff of Shahid Kamiyab hospital in the spring and summer 1393(.....) by WHO hand hygiene observative checklist.

**Results:** The hand hygiene condition of 20 staff of each ward was monitored. Staff were monitored before the contact with patient, after the contact with patient, before aseptic work, after the contact with environment, and after the contact with patient's secretions. 1113 cases were monitored in the spring 1393 in Shahid Kamiyab hospital. Among these, 158 cases were group C( physicians), 532 group A( nurses and nursing students), 289 group B( ancillary staff and workers), and 134 group D( para clinic staff).

7625 cases were observed in which 616 cases used water and soap and 1225 cases used alcoholic liquid. 76% followed the hand hygiene standards and 24% didn't. 19% of physicians, 19% of nurses,25% of ancillary workers and 17% para clinic staff followed the hand hygiene standards.

Following corrective measures such as

1. Face to face education( hand hygiene guidelines)
2. Hand washing supervision
3. Not using gloves in unnecessary situations
4. Educating the ancillary workers.

The hand hygiene condition was monitored in summer 1393. 695 cases were monitored in Shahid Kamiyab hospital. Among these 208 cases were group C( physicians), 285 cases group A( nursing staff and students), 117 cases group B( ancillary staff and workers) and 85 cases group D( para clinic staff). 8653 cases were monitored in which 2278 cases used water and soap and 979 cases used alcoholic liquid. 62% followed the hand hygiene standards and 38% didn't. 39% of physicians, 41% of nurses, 33% of ancillary group and 27% of paraclinic staff followed the hand hygiene standards.

**Conclusion:** Due to the finding of this study educating people will increase the hand hygiene condition. Monitoring the hand hygiene condition is the first step in controlling the nosocomial infection and knowing the related factor is the second step.

**Key words:** hand hygiene, microorganism, indication

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## The importance of surveillance of Onychia and Paronychia patients in Prevention from Nosocomial infections

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### ABSTRACT

**Introduction:** Candidomycotic onychomycosis is an important public health problem in surgeons, hospital personnel and immunosuppressive state. Candida onychia and paronychia is the most common type of Candidiasis and is marked by swelling and erythema of the proximal and lateral nail folds, also called "whitlow". The aim of this study was to investigate prevalence and mycologic profile of Candidomycotic onychomycosis.

**Methods:** The material was obtained from proximal and lateral nail edges. For Candida onycholysis, the lifted nail bed and the under surface of the nail plate were scraped. The sampled material was divided into two portions: one for direct microscopy and the remainder for culture. In order to use nail, fine shavings or minute clippings were preferred. The specimens must not be kept in moist media to avoid rapid multiplication of bacterial and fungal spores. The specimen mounted in a solution of 20% KOH and cultured into Sabouraud glucose agar plus Chloramphenicol to eliminate bacterial contamination from non-sterile sites. Ideally the specimen should be incubated at 25-30°C.

**Results:** A total of 62 cases with suspected onychomycosis were examined for candida onychomycosis. Laboratory examination confirmed onychomycosis in 19 patients, of which 62 cases were presented with positive microscopic and cultural examinations.

**Conclusion:** The most prevalent species of Candida were Candida albicans especially in infected fingernails. Female affected more frequently than male and in both sexes, those who were 20–39 years old were more infected. In Candida infections, yeast forms were also present. The growing trend towards the frequency of fingernail onychomycosis in hospital personnel, surgeon and housewives was noticeable in the last decade in Iran. Therefore dry hands for treatment of onychia and paronychia and preventing infections of patient is necessary.

**Key words:** Candida spp., onychia, paronychia, Nosocomial infections





## The incidence of nosocomial blood stream infection in patients admitted in Tabriz Children's Hospital

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### ABSTRACT

**Introduction:** Septicemia is one of the most serious infectious diseases in pediatrics that can be life threatening. Sepsis can be induced by broad spectrum of microorganisms from gram negative to gram positive bacteria, fungi and etc. Invasive procedures, use of broad spectrum antibiotics, catheters, host factors and so on can induce systemic infections (bacteremia and fungemia). Sepsis is an important cause of death in childrens.

**Materials and Methods:** Based on national nosocomial infection surveillance system, specific check lists for every patient with nosocomial blood stream infection were filled by infection control nurse and collected data were analyzed by SPSS.

**Results:** Among 1639 admitted patients in 1392, 94 patients become afflicted with blood stream infection.

The highest rate of infection occurred in NICU (39 patients). 29 cases occurred in oncology ward and 12 cases in PICU. 95.7% of these patients had peripheral catheter, 62.7% had central vein catheter. 57.4% of cases were intubated. 41.4% of cases had undergone surgery and 40.4% had total parenteral nutrition. 39.7% of cases diagnosed by positive cultures. The most common isolated micro organism were Candida ( 38.3%), staphylococcus aureus ( 13.3%), coagulase negative staphylococci (10%), streptococcus viridans, enterococci, pseudomonas klebsiella(8.3%), E.coli(6.6%), non fermentative gram negative bacili (5%) and acinetobacter(1.6%).

The majority of gram positive cocci and gram negative bacilli were resistant to third generation Cephalosporins. Gram positive cocci were sensitive to Vancomycin, Imipenem and Ciprofloxacin and gram negative bacilli were sensitive to Imipenem and Ciprofloxacin.

**Conclusion:** According to prevalence of fungal infections in newborns and immuno compromised patients, aseptic techniques in all invasive procedures and rational use of antibiotics to prevent resistance must be considered.

**Keywords:** Nosocomial infection, resistant antibiotic, bloods stream infection

## The measure of observing sanitation principles of hands in Isfahan hospital 1389

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### ABSTRACT

**Introduction:** Hospital infections are one of the most important problems of healthcare. Hand sanitation is the basic step to reduce infections. It is a simple step though; the weakness of its acceptance among healthcare supervision is trouble-making worldwide. The aim of this study is to determine the measure of observing hands sanitation in Shariati hospital, Isfahan.

**Materials and Methods:** This study is descriptive-sectional which has been done on all unites of Shariati hospital of Isfahan (except operation room and intensive care unit). Data were collected through one questionnaire and checklist .The condition of sections and observing hands sanitation were classified to three levels of good , medium and weak .The collected information were analyzed by Spss software v11 and descriptive-analytical tests.

**Results:** results showed that hand sanitation in the majority of study units(63%) is in good level also the average of scores for washing hands were evaluated in medium level (44/87).

**Conclusion:** In addition to reduce hospital infections to control epidemics and special outbursts from an illness it is important to develop the quality of hands sanitation in healthcare systems, it needs serious interference to change the system of attention to patients and also changing the personals behavior about hand sanitation.

**Keywords:** Hospital infections, hand sanitation, washing hand

## The pattern of bacterial infection based on positive culture results

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### ABSTRACT

**Introduction:** Hospital-acquired infections are one of the most common problems leading to life-threatening complications, increased mortality, prolonged hospitalization and increased cost of treatment in patients. Identification of type of micro-organisms that cause these infections could be useful in deciding whether to start antibiotics. Meanwhile, the results of delayed treatment can effectively offset the variability in patients' prognosis is poor.

**Materials and Methods:** In this study on patients admitted to Sheikh Hospital (Nephrology, emergency and ICU wards), all positive cultures of blood and urine were collected from the beginning of April 2014 to the end of December 2014 and were classified by types of organism; Thus, the most common bacterial infections by type of organism and place of occurrence obtained to guide physicians in determining Treatment with antibiotics in future.

**Results:** Of 3697 blood cultures that were examined, 319 cases (8.6%) were positive, the most common organism was Pseudomonas 32%, Staphylococcus epidermidis 28%. Urine samples from 3337 were reviewed, 569 patients (17%) were positive. Ecoli with 63% was the most common bacterial infections with coagulase-negative staphylococci after it (8%).

**Conclusion:** Determining the most common types of micro-organisms makes experimental treatment possible to achieve a culture. According to the results, the importance of prevention standards to prevent the spread of germs including hand hygiene which is the most important is obvious.

**Keywords:** blood culture, urine culcure, nasocomial infection

## The role of recombinant human granulocyte colony-stimulating factor (G-CSF) in the management of neonatal sepsis in premature infants

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### ABSTRACT

**Introduction:** neonatal sepsis is one of the most important causes of mortality and morbidity in the premature neonates. Mortality increases when sepsis is associated with neutropenia. In the preterm infants, neutrophils have quantitative and qualitative defects. The aim of this study is to determine whether recombinant human granulocyte colony-stimulating factor (G-CSF) administration has positive effect in sepsis in premature neonates.

**Materials and Methods:** in this study we enrolled fifty premature neonates with GA <35 weeks and mean birth weight of  $1500 \pm 499$ g, who were under 5 days old that were admitted to NICU with the clinical diagnosis of sepsis. The study population was divided to the case (G-CSF) and control placebo (normal saline) groups. To analyze data with nominal scale, Pearson Chi-Square was used. In cases which more than 20% of expected frequencies of tables were less than 5, (Cochran) Fisher's test (Fisher's Exact Test) was used. SPSS v.19 and Statistical V.8 software were used.

**Results:** There was a significant difference between two groups for absolute neutrophil count (ANC) in second sampling ( $P=0.010$ ), but for other cases, the difference wasn't statistically significant ( $P>0.05$ ). Also the change in absolute neutrophil counts between two blood tests showed significant difference in control group, ( $P=0.006$ ), but the difference wasn't statistically significant in the study group ( $P= 0.627$ ).

**Conclusion:** Routine administration of G-CSF is not recommended as an adjuvant therapy for neonatal sepsis in non-neutropenic premature neonates.

**Keywords:** granulocyte colony stimulating factor- neonatal sepsis- Prematurity

## The survey of frequency, distribution and determine the antibiotic resistance of nurse clothes pathogen strains in Afzalipur educational hospital, Kerman in 2012

### ABSTRACT

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**Introduction:** Nosocomial infection is an infectious disease that occurs when the patient is admitted to hospital. Prevention of infectious diseases is duty of all people who have direct contact with patient. In the meantime, nurses due to having most contact with patients have most effect and role for infection controlling. This study conducted for determine of frequency, distribution and antibiotic resistance for nurse clothes pathogen strains in Kerman afzalipur hospital in 2012.

**Materials and Methods:** in the morning of three different days in one week sampling done from front and sleeve of nurse clothes in this cross-sectional study. Pathogens cultured and assessed with anti-bio-gram test and data analyzed by spss software.

**Results:** The most and least abundance on front of clothes related to bacillus (28.60%) and micrococcus (1.40%) and on sleeve correlated to bacillus (30.00%) and E.coli (1.40%). The most sensitive species was acenitobacter with 86% and least sensitive was for E.coli with 60% resistant.

**Conclusion:** bacillus bacteria are the most abundant and micrococcus bacteria are the least abundant on afzalipur hospital nurses clothes. acenitobacter is the most resistant bacteria against antibiotics and also micrococcus is the most sensitive bacteria.

**Keywords:** nosocomial infection, pathogen, anti-bio-gram, bacillus, E.Coli, antibiotics resistance

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## The use of vaccines to prevent infection by enterohemorrhagic *Escherichia coli*

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### ABSTRACT

**Introduction:** *E. coli* O157: H7 is a subset of enterohemorrhagic *E. coli* pathogens that can cause diarrhea or hemorrhagic colitis in humans. Hemorrhagic colitis cause hemolytic uremic syndrome (HUS). In this study, the immunogenicity of conjugated compounds (D-LPS- DT) was studied.

**Materials and Methods:** LPS of these bacteria extracted by hot phenol method, then dialysis and electrophoresis were done. The purified LPS detoxified by alkaline method. To improve immunogenicity, the purified antigen was coupled to DT. The reaction mixture was passed through a sepharose CL-2B column. Then four groups of female BALB/c mice (each group included 15 mice) were selected.

**Results:** Vaccination was performed by three doses with two week interval. After second and third doses, LPS-DT showed significance increase in antibody titers compare to LPS.

**Conclusion:** These results indicated that LPS from *E. coli* O157: H7 increase anti LPS antibodies in conjugate form with diphtheria toxoid and can be an appropriate effective candidate vaccine for enterohemorrhagic infections.

**Keywords:** *E. coli* O157: H7, LPS, conjugate, enterohemorrhagic

## The views of infection control nurses and head nurses on the infrastructure survey of hand hygiene in different wards of Imam Reza hospital, Mashhad-Iran

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### ABSTRACT

**Introduction:** Health care associated infections are a major problem for patient safety and its prevention must be the first priority for settings and institutions committed to make health care safer. Hand hygiene is a simple and effective measure to reduce the rate of these infections. WHO prepare guidelines for hand hygiene in health care settings. For implementing of this guideline, we need ward structure survey.

**Materials and Methods:** We used a questionnaire including parameters for ward structure survey on the basis of WHO guidelines in different wards of Imam Reza hospital, Mashhad-Iran during 2012. Infection control nurses and head nurses filled the forms personally. Then the differences between two groups were determined by statistical tests.

**Results:** There were statistically significant differences between two groups for following questions: Are disposable towels available at all sinks, Is an alcohol-based hand rub available, are wall dispensers placed at the point of care, Does every health-care worker have easy access to hand rub bottles, Are hand rub dispensers replaced when empty, Are posters illustrating hand rub technique displayed close to the dispensers and in multiple areas of the ward. Head nurses had positive view on hand hygiene requirements in wards compare to infection control nurses.

**Conclusion:** We should consider the differences between views of infection control nurses and head nurses when we survey ward structure for hand hygiene.

**Keywords:** Hand hygiene, Infrastructure survey, wards, Iran



## Topical application of Aloe Vera gel to neonatal umbilical cord to prevent omphalitis

### ABSTRACT

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**Introduction:** each year about 4 million neonatal deaths occur that more than 30% are caused by infections. Some of these infections start as umbilical cord infection.

Incidence of omphalitis in low-income countries is estimated 2-77 per 1000 live births in hospital settings, with fatality rates of 1% to 15% depending on the definition of omphalitis used.

Community-based data show even higher infection rates: for example, 105 per 1000 live births in Nepal, 217 per 1000 live births in Pakistan and about 197 per 1000 live births in India. Remarkably, no data are currently available from most countries in Africa where most deliveries still occur at home and where neonatal mortality remains high. The aim of this study is to determine efficacy of Aloe Vera gel on prevention of omphalitis.

**Materials and Methods:** This study is a randomized clinical trial. Sampling method was convenience and Samples were randomly divided into three groups: aloe Vera, placebo and control (keep it dry and clean) groups. For data analysis, the Student's t-test with SPSS software v16 was used.

**Results:** Redness around the cord in the placebo and control groups were significantly more ( $p=0.002$ ) compare to Aloe Vera group ( $p = 0.002$ ). Also, cord swelling in the placebo group were significantly more compare to keep clean and dry ( $p=0.002$ ) and Aloe Vera ( $p = 0.002$ ) groups. Omphalitis in the placebo group was significantly more than clean and dry ( $p=0.000$ ) and aloe Vera ( $p=0.000$ ) groups.

**Conclusion:** Application of aloe Vera gel reduces the time of umbilical cord separation and omphalitis.

**Keywords:** omphalitis, umbilical cord, Aloe Vera

## Tuberculous spondylitis in Iran

### ABSTRACT

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**Introduction:** Because of the increased incidence of tuberculosis in recent years, infective spondylitis has remained as a major problem in the world. Symptoms of spinal tuberculosis are often nonspecific, and the clinician should be aware of this entity.

**Materials and Methods:** In a retrospective study during 8 years we evaluated 40 cases with documented tuberculous spondylitis in Loghman hospital, Tehran, Iran. Epidemiologic aspects, clinical manifestation, laboratory tests and radiologic studies were evaluated.

**Results:** 25 (% 62.5) of our patients were male and 15 (% 37.5) were female. The eldest was 77 and the youngest was 17 years old. Average age was 47 years old. Incidence of involved vertebrae was as follows: cervical 10%, thoracic 37.5%, thoracolumbar 27.5% and lumbar 25%. Accompanying diseases were pulmonary TB (%72), TB pleural effusion (% 18), paraspinal abscess (%18) and renal TB (% 2.5). Clinical manifestations were back pain in %100, anorexia in %100, fever in % 90, cough in % 53 and limb paralysis in % 2.5 of patients. Erythrocyte sedimentation rate (ESR) was detected between 50-125 mm in %35, 20-49 mm in %15 and less than 20 mm in % 10 of patients.

**Conclusion:** Prompt diagnosis and treatment of skeletal TB is important to prevent serious bone and joint destruction and severe neurologic sequel.

**Keywords:** Tuberculosis, spondylitis, Pott's disease

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## Two-year Review of Bacteriological Profile of Burn Wound Isolates in Mashhad, Iran

### ABSTRACT

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**Introduction:** Considerable advancements in shock resuscitation and wound management have extended the survival of burned patients and increased the risk of serious infection. *Streptococcus Pyogenes* was the most frequent recognized cause of burn wound sepsis in the early part of the last century. Over the years, however, *staphylococcus aureus* and *Pseudomonas aeruginosa* and other gram negatives become the most frequent isolated organisms in most burn units. It is generally known that the spectrum of infective agents varies from time to time and from place to place. For this reason and to determine the prevalence of bacteria causing wound infection, a retrospective study was conducted at the Burn center of Emamreza hospital in Mashhad, Iran.

**Materials and Methods:** All available wound Swabs Culture were from burn victims admitted between September 2012 and December 2014. A total of 299 microorganisms were isolated from burn wounds.

**Results:** Our results revealed that the most common isolated was *Acinetobacter baumannii* (173 cases – 56.4%), followed by *Pseudomonas aeruginosa* (12.7%), *Klebsiella SPP* (10.7%) *Entrobacter* (6.2 %), *Staphylococcus aureus* (5.2 %), *Proteus SPP* (1 %), *E Coli* (1%) and others (6.8%)

**Conclusion:** *Acinetobacter baumannii* was the most common cause of infection in our patients. Multidrug resistance has emerged as an important concern in our burn unit; that suggests hygiene should strictly be maintained around burn patients to avoid opportunistic infection.

**Keywords:** burns, bacterial profile, wounds, *Acinetobacter*

# **Evaluation of microorganisms causing hospital-acquired infections and antibiotic resistance patterns in patients admitted to one of the hospitals in Urmia City, 1393**

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## **Introduction and Objectives**

Urinary tract infection (UTI) is the most common hospital-acquired infection that includes almost 42% of all hospital-acquired infections. There is resistance to antimicrobials against many types of pathogens creating hospital-acquired infections such as UTI which increase the rate of morbidity and mortality. The aim of this study was to investigate the most common organisms causing urinary tract infections and antibiotic resistance pattern in patients with urinary tract infection.

## **Materials and Methods:**

In the present descriptive study which has been conducted from 1390 to 1393, to determine the type of microorganisms and antibiotic resistance rate, 148 positive urine cultures which registered in INIS - the presence of  $10^5$  count colony per ml urine - has been analyzed.

## **Results:**

According to the results of this study, enteric gram-negative bacilli (Enterobacteriaceae) were the most common cause of urinary tract infections to the 74/54% and gram-positive Coccids consists mainly coagulase negative Staphylococci and Enterococci are in second place to the 16/36%. Also Pseudomonas Aeruginosa are in the third place to the 5/45%. The results showed that most Gram-negative bacilli resistant to first and third generation of cephalosporin antibiotics to the 36/07%.

## **Conclusion:**

According to the high prevalence of the Enterobacteriaceae causing urinary tract infections in the hospital and identifying patterns of antibiotic resistance, health workers should have particular attention to choose the correct antibiotic used in the treatment of patients whom suffering from hospital-acquired infections.

**Keywords:** Uterine Tract Infection, Resistance pathogens, Antimicrobial resistance pattern, hospital-acquired infection.

# **Assessment of hand hygiene compliance among the personnel of emergency department in one of the hospitals in Urmia city, 1393**

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**Introduction and Objectives:** Hand hygiene is one of the easiest, low cost and most effective ways to prevent the spread of antimicrobial resistance. Increasing hospital-acquired infections, especially pathogenic organisms resistant to the effects of antibiotics make clear the specific importance and effective interventions to prevent the large number of suffered patients, the high cost, treatment and mortality. Therefore, considering the importance of hand hygiene to control and prevent the transmission of infection, this study aimed to evaluate the compliance of hand hygiene in the emergency department of a Hospital in Urmia city.

## **Method and Materials:**

This descriptive study was done on all personnel of an emergency department of one of the teaching hospitals in 1393 in Urmia city. In order to collect data the World Health Organization standard checklist was used which included five moments of hand hygiene and four techniques of hand washing. Each of the participants observed 5 times and overall 150 cases were evaluated.

## **Results:**

The most used technique was hand wash which have used 60% by ancillary. The highest moments of the hand hygiene was 58% after patient surface by physicians in the highest respect.

## **Conclusion:**

According to importance of hand hygiene and hand washing in all moments announced by WHO personnel should constantly train and barriers to this important case to be revised.

**Keywords:** Hand washing, Emergency personnel, Hand hygiene,