

A comparative study of teaching clinical guideline for prevention of ventilator-associated pneumonia in two ways: face-to-face and workshop training on the knowledge and practice of nurses in the Intensive Care Unit

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ABSTRACT

Introduction: Ventilator-associated pneumonia (VAP) is the most nosocomial infection in the intensive care units (ICU) and the nurse's role in preventing this phenomenon is very important. The aim of this study is to compare the effect of two methods: face to face training and workshop guide clinical in prevention of VAP.

Materials and Methods: In this experimental research, the knowledge and practice of nurses in ICUs were divided in two groups: face to face training (35 nurses) and workshops (40 nurses) by using clinical guideline in prevention of VAP in one of the hospitals of Shiraz University of medical science. These nurses have been selected randomly and the level of knowledge and practice in each group was assessed by self-report questionnaire, knowledge questionnaire and also direct observation of practice, before and after training. Data were analyzed with descriptive statistics (mean and frequency) and analytical tests (paired t-test, independent t-test, McNemar test, Fisher's exact, sign and Chi-square test).

Results: The incidence of inappropriate pressure of cuff in the tracheal tubes and tracheostomy tube were significantly reduced after training compared to before training. The results showed significant difference in two groups of face to face training and workshop ($p < 0.001$). Furthermore, the frequency of not performing suctioning by nurses in face to face group ($p = 0/008$) and workshop group ($p = 0/002$) showed significant difference compared to before training, although, both methods of face to face training and workshop was very effective on nurses level of knowledge and practice, but by comparing these two methods and relation between the variable of the study no significant difference were found.

Conclusion: Monitoring and evaluating ICU about principles of VAP particularly for cuff pressure, appropriate suctioning and disinfecting hands is essential and training nurses is highly effective in preventing VAP.

Keywords: pneumoni, nurse, knowledge, practice

Assessment of Hand Hygiene Compliance before and after implementation of WHO Hand Hygiene Improving Program

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ABSTRACT

Introduction: As declared by the World Health Organization, hand hygiene is the most powerful preventive measure against health care associated infections and thus it has become one of the five key elements of patient safety program. The aim of this study was to assess the effect of implementation of WHO Hand hygiene improving program among health care workers of a tertiary teaching hospital.

Materials and Methods: We assessed hand hygiene compliance among health care workers according to five defined moments for hand hygiene by WHO in fourteen intensive care units of a tertiary teaching hospital in Shiraz before and after implementation of WHO hand hygiene improving program. We used direct observation method and documented the results in WHO hand hygiene observation forms.

Results: There was significant change in compliance before and after implementation of WHO hand hygiene improving program (41% and 70% respectively).

Conclusions: The implementation of WHO program can significantly and effectively improve hand hygiene compliance among health care workers.

Key words: Hand hygiene, Health care associated infections, Health care worker, WHO

Community-acquired methicillin-resistant *Staphylococcus aureus* nasal colonization

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ABSTRACT

Introduction: Community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) is a serious pathogen and its nasal carriage is a risk factor for subsequent infections. This study aims at determining the prevalence and risk factors of CA-MRSA colonization at the time of hospital admission in our community.

Materials and Methods: Anterior nares cultures were obtained from patients coming to the emergency department of Loghman Hakim hospital in Tehran within 24 hours of admission. Antibiotic susceptibility tests (E-Test) were performed. A positive culture of MRSA within 24 hours of admission was considered as CA-MRSA. Data analysis was performed for assessment of associations between culture results and risk factors.

Results: 56 (14%) and 11 (2.7%) of 400 patients had positive nares culture for *S. aureus* and MRSA respectively. HIV infection (P value= .001), nursing homes residence (P value= .033) and nasal anatomic abnormalities (P value= .033) had significant association with CA-MRSA cultures. However in logistic regression, no statistically significant association was found. 45% of MRSA cultures showed induced resistance to clindamycin on D-test. Based on 25 µg/ml cutoff for susceptibility to Tigacycline on E-test, 18.1% showed resistance.

Conclusion: Our study showed 2.7% prevalence of CA-MRSA and didn't demonstrate any association between recent hospitalization, antibiotic use and IV drug use with CA-MRSA carriage.

Keywords: *Staphylococcus aureus*, methicillin-resistant, nasal colonization

Comparing two methods of sternal skin repair in Diabetic patients with CABG to prevent sternal wound infection in Mashhad, Iran

ABSTRACT

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Introduction: sternal wound infection is a rare but very serious complication after cardiac surgery that can increase mortality and morbidity. It occurs in 1% to 2% of patients who had undergone open-heart surgery and it has 20% to 30% mortality rate. Risk factors for sternal wound infection are bilateral internal mammary artery bypass grafting, diabetic patients, obesity, smoking, corticosteroid therapy, chemotherapy, COPD and Renal dysfunction. Treatment entails surgical debridement with closed irrigation, open-wound packing, or muscle or omental flap procedures, as well as antibiotic therapy. The aim of this study was to investigate the best and simple surgical approach to prevent sternal wound infection in diabetic patients following CABG.

Materials and Methods: Retrospectively we studied 40 consecutive diabetic patients (15 men and 25 women) who underwent isolated CABG in 2014-2015. Two closure sternal skin methods were used. In 20 patients we closed skin with non absorbable separate suture (group A) and in another 20 patients skin closed with absorbable continuous suture (group B), and then we compared to those in whom DSWI developed. Mean follow-up of DSWI patients was 3 months. The propensity for DSWI was determined by logistic regression analysis.

Results: Of 40 diabetic patients, 7(17.5%) had sternal wound complications (2 patients (10%) in separate non absorbable group and 5 (25%) in another group) (P=0.244). All patients with deep sternal infection were treated by debridement, rewiring, and delayed primary closure. Median length of stay was 16 days and there was not any mortality in two groups. There was no significant difference in sternal wound infection and early mortality between 2 groups (p=0.244).

Conclusion: In diabetic patients candidate for CABG sternal wound infection may be reduced by using non absorbable separate skin sutures. However, the nature of the suture material used may have led to this observation, as the separate suturing technique used nonabsorbable material did not allow predispose to infection. Differences in the methods of skin closure have the potential to affect patient outcomes and use healthcare resources. Further well-designed trials at low risk of bias are necessary to determine which type of suturing is better.

Keyword: DWSI, CABG, Nonabsorbable separate suture, Absorbable continuous suture

Comparison of Three Different Sterilization and Disinfection Methods on Orthodontic Markers

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ABSTRACT

Introduction: Because of daily exposure of dental staff and patients to pathogen micro-organisms, it is of great importance to follow strict infection control procedures. In fact, the main goal of infection control is to minimize the risk of transmission of infection from doctor to patient, from patient to doctor, from patient to patient and from dental staff to their family and to the society. Marking pencils which are frequently used in orthodontics may cause microbial contamination. The purpose of this study was to evaluate and compare the effectiveness of three disinfection and sterilization methods (autoclave, glutaraldehyde solution and Deconex spray) on orthodontic markers.

Materials and Methods: 120 orthodontic markers were divided into 4 groups of 30 pencils: 1 control group and 3 groups for three different disinfection and sterilization methods. In order to evaluate the effectiveness of methods, pencils were placed in and contaminated by microbial suspensions including two types of bacteria (*Escherichia Coli* and *Staphylococcus Aureus*) and one type of fungi (*Candida Albicans*). Then, the pencils were either sterilized or disinfected and placed in sterile physiologic serum. The number of colonies of micro-organisms was counted after they cultured in their culture media.

Results: In the control group, the mean number of *E.coli* colonies was significantly higher than the other two micro-organisms. However, the mean numbers of *S. Aureus* and *C. Albicans* colonies were not significantly different. After sterilization with autoclave and glutaraldehyde, no microbial growth was observed, whereas after disinfection with Deconex spray few colonies of micro-organisms could be counted.

Conclusion: Autoclaving and glutaraldehyde solution are the best methods for disinfecting orthodontic markers.

Key words: Orthodontics marker, infection control, microbial contamination

Compliance of hand hygiene among physicians and other personnel of Tabriz Children Hospital

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ABSTRACT

Introduction: Surveillance and control of hand hygiene is one of the most important activities in evaluation of health care workers to increase motivation for additional education and quality improvement. In addition, control of hand hygiene can result in assessment of nosocomial infections. Hand hygiene can be evaluated by direct and indirect methods. Direct methods include observation, patient's assessment and self reporting of the staff and indirect methods include control and evaluation of soap, hand rub solutions and tissue consumption in hospital. The gold standard of WHO to evaluate and surveillance of hand hygiene is direct observation. Direct observation is the most confident method to assess the quantity and quality of following of hand hygiene guidelines.

Materials and Methods: Hand hygiene, knowledge, attitude and practice were evaluated by standard check-list in 3 professional groups include physicians and residents, nurses and other personal of hospital (laboratory staff, radiology staff and physiatrists, ...) in different wards of a teaching hospital and in 3 different working shifts. To reduce the Hawthorne effect due to changing behavior of personals and pseudo increase of compliance, observers were selected among experienced personnel. They observed imperceptibly and simultaneously 3 persons and evaluated them in 5 situation of hand hygiene and filled the check lists.

Results: Knowledge of health care personal in 72.5% was good and in 27.5% was moderate. In 1143 situation of hand hygiene 44.5% of nurses, 40.3% of physicians and 6.6% of other personal followed the hand hygiene guidelines. Hand hygiene with water and soap and hand rub solutions were 67% and 33%, respectively. In five situation of hand hygiene, before contact with patient, before aseptic procedure, after contact with patients secretions, after contact with patient and after contact with patients environment the abiding rate in personal was 19%, 25.1%, 97.9%, 49.2%, 36.4%, respectively. Occupation and lack of enough time (56.1) and dermatitis and irritation of skin (63.4) were the reasons that health care personnel justified the low compliance of hand hygiene.

Results: Considering the results, abiding rate of hand hygiene instructions in our hospital was comparable with other centers. However considering the role of hand hygiene in prevention of infectious diseases, using adequate health care staff and preparing requirements of hand hygiene with appropriate quality and constant education is recommended.

Key Words: Compliance, hand hygiene, nosocomial infection

Determine the infection facilitators in peripheral IV catheter in viewpoint of nurses in medical-surgical wards in hospitals, Isfahan University of medical sciences

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ABSTRACT

Introduction: IV therapy is essential for providing electrolytes, fluid, and hydration and medication therapy and one important access is peripheral IV catheter. In spite of value of this method, peripheral IV catheter is a main cause for Nosocomial infections. The purpose of this study was to determine the infection facilitators in peripheral IV catheter in viewpoint of nurses in medical-surgical wards in hospitals, Isfahan University of medical sciences, Iran.

Materials and Methods: This was a descriptive study conducted in nurses with randomized sampling methodology. A total number of 379 nurses from 3 hospitals affiliated to Isfahan University of Medical Sciences were enrolled. Questionnaire contains 2 parts (clinical and demographic characteristics information and infection facilitators) was used for data collection. The data were analyzed by SPSS V18 using descriptive and analytic statistics.

Results: The majority of cases were female (80.6%) and their ages ranged from 22 to 52 years. The most common infection facilitators in peripheral IV catheter in viewpoint of nurses were included washing hands before procedure (100%), gloves (99.2%), proper disinfection of the insertion site IV catheter (97%), insert IV catheter in healthy skin (97%), hair shave the location of IV catheter insertion (95.7%), on time IV catheter replacement (94.5%) and consider sterilization principle in inter and remote the IV catheter (94%). With regard to spearman test, there was a significant association between infection control nurses' view point with age ($P=0.001$, $r= - 0.48$) and work record ($P=0.02$, $r= - 0.55$). Also Mann-Whitney U test showed there was a significant association between infection control nurses' view point with gender ($P=0.04$).

Conclusion: The findings of this study highlighted the importance and the necessity of a closer and deeper attention to infection facilitators to decline the infection caused by peripheral IV catheters.

Keywords: Infection, Infection facilitators, Medical-surgical wards, Nurse, Peripheral IV catheters

Development and implementation of web-based information system for hospital infection control and prevention

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ABSTRACT

Introduction: Development and implementation of web-based information system for hospital infection control and prevention

Materials and Methods: Health care workers exposed to occupational health and safety risks in health care environment. In the present study, with respect to notification standard precautions, web-based training and information system designed to hospital infection control and prevention. In the first phase, clinical staff (383) on the use of information resources for medical information expressed their opinions by questionnaire. Secondly the staff views (446 people) about occupational exposure at workplace and level of their knowledge regarding personal protective measures were determined. In the third stage, according to the opinions of experts, the structure and content of a web-based training and information system was designed to the prevention the occupational exposures at workplace.

Results: The results showed 74.6% specialists and 65.9% of the residents selected the internet as a source of medical information. About standard precautions, 48.8% of specialists, 56.6% of residents, 47.9% interns and 36.1% nurses did not know the least time for washing hands. After implementation of web-based training and information system in Imam Reza hospital, number of occupational exposures decreased in comparison with Ghaem hospital.

Conclusion: Design and implementation of web-based systems can be effective about the prevention and control of hospital infections and increasing the level of personnel's safety that can provide quality care for their patients.

Key words: hospital infection; web- based system; standard precautions

Anti microbial resistance

ABSTRACT

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Introduction: Prevention and effective treatment of infections and epidemics that humans might get are affected by the phenomenon of antimicrobial resistance and their number is increasing daily. Due to this phenomenon, the individual's health and consequently the overall health of the population are under serious threat.

Once there were talks that in not too distant future humans will have some sort of infections that there will be no effective antimicrobial treatment for them and the outcome of such infections would turn to a major health threat to the whole society. Now the time has come. No-treatment Tuberculosis, sexually transmitted infections that antibiotics are not effective against them, nosocomial infections that have crossed the borders of threatens; malaria which there is no cure for that and it is likely to be wider by the day and that leads to lose in the lives of many people, because of the event that at least a significant part of it would have been preventable.

Although the phenomenon of antimicrobial resistance depends on various factors and some of these factors are not preventable, but also those that were preventable no serious consideration for them performed.

Not managed or bad management treatments of very important diseases such as tuberculosis, HIV and malaria and gonococcal infections and nosocomial infections and even non-nosocomial infections, Irrational and indiscriminate use of antibiotics that could have a very valuable role for many years in the treatment of infectious diseases, Indiscriminate use of antimicrobial drugs in food industry and livestock and poultry industry, are included in the factors that accelerate the occurrence of this phenomenon.

Now it's the time for our dear colleagues who work in the field of prevention and treatment of diseases to have a scientific and evidence-based vision and to prepare themselves better to deal with the phenomenon of antimicrobial resistance.

Fighting the phenomenon of antimicrobial resistance requires a multisectoral approach across sectors that are active in terms of human and animal health, industry and agriculture, livestock sectors, environmental protection parts and more.

It's now years that this destructive phenomenon has been considered in the developed countries and they invested in the prevention and proper exposure to that. So we also can do that. We must seize opportunities.

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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 of Iran from October to November 2014.

Results: The mean age (\pm SD) of 38 LT recipients were 23 (\pm 1.5) years old, ranged from 1.5 to 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 as a major problem in early period after LT. Assessment of the associated risk factors is crucial in its further control.

Keyword: Liver Transplantation, Surgical Wound Infection, Infection, Urinary Tract Infections

Effect of drug resistance monitoring program to reduce spread of resistant acinetobacter in General ICU, Shafa Hospital, Kerman, 2013-2014

ABSTRACT

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Amlashi

Introduction: Antibiotic resistant bacteria are challenges to the world's health systems. They lead to increased morbidity and mortality and costs. These bacteria are able to spread quickly. This study aimed to determine the effect of antimicrobial resistance monitoring program to reduce spread of resistant acinetobacter in Shafa hospital, Kerman.

Materials and Methods: This cross sectional study was conducted in ICU, for 6-month period before intervention (period 1) and 6-month after intervention (period 2). Passive surveillance in the patients with positive culture was used. Resistance to antibiotics was performed by disk diffusion method. Control of drug resistance program include: appropriate hand hygiene, contact precautions, training, isolation and environmental hygiene practices. Data were collected using HIS system & laboratory.

Results: Before intervention, the rate of pan drug-resistant *A. baumannii* colonization and/or infection was 33.9 cases per 1000 patient-days. After the intervention (period 2), this rate decreased to 18.3 cases per 1000 patient-days ($P < 0.1$). Contact precautions in period 2 increased 60% (from 30% to 90%). Hand hygiene compliance increased from 30% to 50% during the intervention period.

Conclusions: The results of this study demonstrate the effectiveness of prevention programs to reduce and prevent of spread resistant strains. Given the devastating impact of the presence of these strains on the health system of national and regional programs, further monitoring is needed.

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Keywords: antibiotic resistance acinetobacter, monitoring program, ICU

Effect of eucalyptus nebulizer on contamination of microbial plaque of endotracheal tube in ventilated patients

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ABSTRACT

Introduction: Urinary infection is very common in older populations. Because of difficulties in communication, older populations are prone to urinary infection. So the purpose of this study was to compare the referral of elderly after holding urinary infection self-care training.

Materials and Methods: This study was a Randomized clinical trial carried out on 40 elderly females who referred to rural health center, which selected by available sampling and randomly divided into two groups. Patients who used catheterization or had spinal cord injury omitted from study. In group 1, self-care training interventions in order to correct elderly life style to prevent urinary infection were consist of regular exercise at least 1hour a week, daily use of water at least 2 liters, contraction of pelvic muscles 3 times a day, each time 2min with deep inspirations, no use of intractably antibiotic. Ultimately after 5 months with comparison to control group (group 2), the referrals registered and analyzed with Spss software with mean score lower than 0.05.

Results: The results indicated significant difference between two groups. In group 1 with mean age of 67.5 years 7 persons (35%) and in group 2 with mean age of 68.2 years 13 persons (65%) refer to rural health center with dysuria after intervention (P value<0.02).

Conclusion: The results of this study showed the importance of providing self-care training program in urinary infection as a critical step in the prevention of elderly urinary infection.

Keywords: urinary infection, elderly, self-care training

Effect of Probiotics on feeding tolerance in VLBW Neonates in NICU

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ABSTRACT

Introduction: In comparison with term infants, high risk infants have abnormal fecal colonization, lack of intestinal flora and delay in normal intestinal colonization. Previous experiences mostly confirms the usefulness of using different probiotics on very low birth weight infants, moreover no dangerous side effects was reported in recent studies on probiotics.

Materials and Methods: This study was a two-group double-blinded clinical trial. Field data collection was done based on purpose in the NICU of Ghaem Hospital and the method of data collection was check list. We divided 20 very low birth weight infants randomly to 2 groups: probiotics receivers and placebo receivers. They received placebo and probiotics for 14 days and at the end the data were analyzed.

Results: The two groups matched on birth weight ($p=0.814$), baseline weight (0.08), size of baseline nutrition ($p=0/236$), age of birth ($p=0.916$), Apgar birth ($p=0.541$), delivery method (0.091). The average weight changes in probiotics group was (130.38 ± 80) and in placebo group was (137.5 ± 73.5), ($p=0.094$). The average nutrition changes in probiotics group was (60.25 ± 31.42) and in placebo group was (31.19 ± 25.35), ($p=0.001$). The average time of hospitalization in probiotics group was (21.2 ± 11.41) and in placebo group was (19.1 ± 6.79), ($p=0.474$).

Conclusion: Use of probiotics in very low birth weight infants increase their feeding tolerance.

Keywords: Neonate, Probiotics, VLBW

Epidemiology of Leishmaniasis on patients: a cross sectional study in Kabul, Afghanistan

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ABSTRACT

Introduction: Leishmaniasis is an infectious disease with a wide distribution in temperate and tropical regions. Leishmaniasis is one of the important problems in Afghanistan, as it is endemic in Kabul. This study aimed to determine the status of cutaneous leishmaniasis in Kabul in 2013.

Materials and Methods: This was a cross sectional study, performed on 5311 patients with leishmaniasis. Patients with the diagnosis of Leishmaniasis in the control center of Leishmaniasis treatment program followed from March 2012 to February 2013 (One year). Information recorded in the relevant form and then SPSS 20 was used to analyze data through descriptive and analytic tests.

Results: The findings of this study showed that 43% (N=2283) male and 57% (N=3027) female had cutaneous leishmaniasis and the highest incidence was in the age group above 15 years with 50% (N = 2665). Frequency of wound in body was 49.9% (N=2602) in face, 32% (N=1699) in hand, 14.4% (N=796) in foot and 2.96% (N=157) in the trunk, respectively. The highest rate was in the north of Kabul with 46% (N=2443) and the least was in the east of Kabul with 1.5% (N=79). The most of cases 41% (N=2177) had occurred in summer. Leishmaniasis in patients was significantly related to living in Kabul.

Conclusion: Leishmaniasis in people of Kabul is a health problem. As results showed, getting government and social organization to pay attention to prevent and control disease in Afghanistan is needed.

Keyword: Leishmaniasis, Epidemiology, patients, Kabul, Afghanistan

Evaluating the effect of hand hygiene celebration and training in hand hygiene of staff of Shafa hospital, Semnan, 1393

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ABSTRACT

Introduction: health and safety of patient is one of the most important issues in health care and hand hygiene has significant role in infection control and increasing patient's safety. The aim of this study was to evaluate the effect of hand hygiene celebration and training in hand hygiene of staff of Shafa hospital in Semnan.

Materials and Methods: This study is quasi experimental. 500 hand hygiene situations of staff during daily tasks with direct and indirect observation using WHO standard check list of hand hygiene were evaluated randomly. Then celebration of hand hygiene and training were performed and after 4 month hand hygiene status in 5 moments for hand hygiene were evaluated. Data were analyzed with Spss software v17 using descriptive statistics and paired T-test.

Results: Before interventions, hand hygiene rate was 22% that reached 28% after interventions and there was significant difference ($P < 0.001$). In all hand hygiene situations, 90% (126 situations) used water-soap and 10% (14 situations) used alcohol solution. From 5 moments for hand hygiene, the most was after exposure to patient's body fluids (60%) and the least was after contact with patient surroundings (2%)

Conclusion: With respect to important role of staff in transmission of nosocomial infections thorough hands, hand hygiene especially in situations with the need for using alcohol solution, seems to be necessary.

Keywords: hand hygiene, infection control

Evaluation of antimicrobial activity of probiotic bacteria isolated from honey

ABSTRACT

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Introduction: Probiotics are live bacteria of food supplements, which can restore natural balance of bowel bacteria and could also have other health benefits. Lactobacillus and bifidobacterium are the most commonly known bacteria. Probiotics present in honey could produce antibacterial agents, which can prevent pathogenic bacterial overgrowth with beneficial effects in Bowles. With increase in production of artificially prepared rather than the natural honey there is a risk of losing probiotics. Therefore it is essential that these bacteria are obtained from natural sources and added to the artificial products.

Materials and Methods: Thirty samples of natural honey, obtained from different regions of Iran, were studied in this investigation. After gram stain and catalase test the tolerance of isolated to acids and bile salts were evaluated. Then Arginine lysis and carbohydrate fermentation tests were performed before determining the antibacterial activities of the isolates against four pathogenic species of bacterium (*S. aureus*, *E. coli*, *B. cereus* and *P. aeruginosa*) using disk diffusion method.

Results: A Lactococcus and two Lactobacillus strains were isolated from the thirty honey samples. Biochemical tests were used to prove their probiotic properties and molecular methods, 16S rRNA PCR, were employed to determine the strain types.

Conclusion: This study showed that probiotics obtained from natural sources are potential candidates, by controlling bacteria overgrowth, for disease presentation. However, more in vivo studies are necessary before they can be recommended for their beneficial effects in humans.

Key words: Probiotic bacteria, antimicrobial, natural honey, Lactobacillus, Lactococcus

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Evaluation of medical waste sterilization in Tehran hospitals

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ABSTRACT

Introduction: Medical wastes are potential hazards for public health and environment. So, sterilization and management of them is an important strategy to prevent hospital and healthcare associated infections. In this study appropriate medical waste sterilization in Tehran hospitals using biological indicators was examined.

Materials and Methods: 25 hospitals from Tehran were selected accidentally and their medical waste sterilization examined for 10 months from April to December 2014. 14 of them used autoclave and hydroclave and 11 of them used chemical methods of sterilization. *Bacillus atrophaeus* indicators with 106 bacterial spores for chemical methods (ATCC:9372) and *Bacillus stearothermophilus* vials with 106 bacterial spores for autoclave and hydroclave (ATCC:7953) were used to evaluate the sterilization. All examinations repeated three times in different months, and finally 75 tests were done. SPSS version 21.0 was used to analyze data.

Results: the results showed in the table.

	Positive	Percent	Negative	Percent	Total
<i>Bacillus stearothermophilus</i>	3	7%	39	93%	42
<i>Bacillus atrophaeus</i>	6	18%	27	81%	33
Total	9	12%	66	88%	75

The positive samples in chemical methods were significantly more than autoclaves and hydroclaves ($p < 0.05$).

Discussion: As the results showed, proper medical waste sterilization have been done in most (88% in this study) Tehran hospitals, although heat sterilization were showed to be more effective and most recommended.

Keywords: Medical waste, Sterilization, Hospitals

Evaluation of Prevalence of MRSA Colonization in 150 Neonates in two Medical Centers in Iran

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ABSTRACT

Introduction: Penicillin was introduced for s-aureus treatment in 1940. However with the over usage of this antibiotic, S-aureus has become increasingly resistant. Due to this problem we studied the epidemiological prevalence of MRSA colonization on 150 Neonates in two Medical Centers, Imam Hossein and Shahid Akbarabadi.

Materials and Methods: Skin and Umbilical samples obtained from 150 newborns in two Medical Centers after 72 hours of admission. Also samples were obtained from anterior nasal mucosa of personnel involved with Neonates in that department by sterile cotton swap. Sterile swap was inoculated in to nutrient agar and then within 24 hours was transferred to sheep blood agar. Colonies that were gram positive in smear and were coagulase positive and DNAase positive were known as s-aureus. S-aureus were transformed to muller hinton NaCl 4 % culture that had Oxacillin Disk. After 24 hours of incubation at 37° C, colonies that grew less than 13 mm around the Disk were known as MRSA, and colonies that grew more than 13 mm were known as MSSA. Information related to neonates and personnel were collected by completing a questionnaire. All the data were analyzed by SPSS software v11.

Results: In our study, 47/3 % of neonates were Male and 52/7 % were female. Prevalence of MRSA in male was 52/8 % and in female was 47/2 %. Mean weight of newborns were 2394±1119 grams. 61 % of S-aureus were resistant to Oxacillin. Prevalence of MRSA in Imam Hossain Hospital was 96/6 % and in Shahid Akbarabadi was 26/7 % that this difference was statistically significant ($P < 0.0001$). All MRSA were sensitive to Vancomycin in Imam Hossain Hospital and there was statistically significant difference in MRSA S-resistant to Cloxacillin and Clindamycin ($P < 0.0001$). In Akbarabadi Hospital there was no statistically significant difference in MRSA S-Resistant to Cloxacillin, Clindamycin and Penicillin. Hospital and Mothers were the most effective agent in MRSA S Prevalence.

Conclusion: Imam Hossein is a general Hospital including an adult surgical ward but Shahid Akbarabadi Hospital is a Delivery Center that has an active NICU. Prevalence of MRSA in Imam Hossein Hospital is greater than Shahid Akbarabadi Hospital due to more variety of patients and over usage of antibiotics. MRSA colonies resistant to Cloxacillin, Clindamycin and Penicillin were more seen in Immam Hossain Hospital and therefore these antibiotics were not used. This Resistance were fewer in Shahid Akbarabadi Hospital and therefore these Antibiotics are still used.

Keywords: MRSA Colonization, Penicillin

Evaluation of the laboratory results of suspected drug resistance TB in Mashhad University of Medical Sciences in 1391-1392

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ABSTRACT

Introduction: Following the widespread use of rifampin (of the 70 century discover of multidrug-resistant tuberculosis) anti-tuberculosis (TB) drug resistance is a major public health problem that threatens progress made in TB care and control worldwide. Drug resistance arises due to improper use of antibiotics in chemotherapy of drug-susceptible TB patients. This improper use is result of number of actions including administration of improper treatment regimens and failure to ensure that patients complete the whole course of treatment. Essentially, drug resistance arises in areas with weak TB control programs. A patient who develops active disease with a drug-resistant TB strain can transmit this form of TB to other individuals.

Materials and Methods: In this cross-sectional study, the information in databases of Tuberculosis Reference Laboratory of Mashhad University and the results of a national reference laboratory for tuberculosis were studied. The diagnostic method was based on direct sputum smear, culture and standard antibiogram (proportional). The results were evaluated by regression and spss software.

Results: Among 116 suspected cases tested, during the second 6 months of 1391 to first 6 months of 1392, 35 patients (30%) were reported with drug resistance, 4 patients were not drug resistance (MDR). 3 cases (8.6%) had resistance to streptomycin and 1 case (2.9%) was resistant to isoniazid and 1 patient (2.9%) was resistant to rifampin. 8 patients (23%) were resistant to both rifampin and isoniazid. There has been a total of 35 drug resistant patients from which 57% (20) were women. 75% of patients were over 60 years old. 10 patients had positive niacin test result and the rest were reported NTM according to their characteristic morphology and colony growth rate, chromogen, and niacin test (negative) were reported NTM (atypical)

Conclusion: Frequency of laboratory multiple drug resistance in patients with suspected multidrug-resistant tuberculosis were (8%) and the proportion of patients with resistance to rifampin and isoniazid (mono-resistant) were 1% and 1%, respectively (MDR frequency in nation-wide study in 1998 was 5% in new cases).

Key words: tuberculosis, Multi-drug-resistant tuberculosis (MDR-TB), Mashhad University of Medical Sciences

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Fungal peritonitis in children on chronic ambulatory peritoneal dialysis (CAPD)

ABSTRACT

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Introduction: Infectious peritonitis (IP) is the most complication in children undergoing chronic ambulatory peritoneal dialysis (CAPD). Various agents are involved in infectious peritonitis. Fungal peritonitis is a rare but serious complication in patients on CAPD. The aim of this study was to assess the prevalence of fungal peritonitis and response to medical management.

Materials and Methods: During an eight years period in 2006-2013, we analyzed 85 episode of infections peritonitis in 153 children who were on CAPD in our hospital (Peritoneal dialysis ward of Dr. Shiekh Hospital Mashhad, Iran) for 6 months to 7 years period (mean 4.2 years). Abdominal pain, fever and vomiting were the most frequent symptoms.

Results: Seven patients had a history of three episodes of bacterial peritonitis, and 3 patients had 2 episode of infectious peritonitis. Diagnosis was based on history, physical examination with high WBC count ($>100/\text{mm}^3$) and or positive culture of the peritoneal fluid. All patients were under antibiotic treatment empirically at first days of admission. Fungal peritonitis was reported in 9 patients who were resistant to antibiotic treatment. Diagnosis of fungal peritonitis was based on isolation of fungi on smear and culture of peritoneal fluid. The responsible fungi were candida albicans (6 cases), candida parapsilosis (2 cases) and non albicans candida in one patient. All patients were undergone intravenous amphotericin B treatment without complete response so we removed the peritoneal catheter. After removing the catheter all cases responded to antifungal treatment.

Conclusion: Fungal peritonitis is a grave complication in CAPD patients with no response to antifungal treatment unless after removing of peritoneal catheter.

Keywords: Peritonitis, Fungal, Peritoneal dialysis

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Hand hygiene compliance rates in Shiraz & Fars hospitals, Mar-Aug 2014

ABSTRACT

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Hospital acquired infection (HAI) is one of the most important causes of increasing mortality, morbidity and health costs. Since most HAI are transmitted from patient to patient via the hands of health care workers. Hand hygiene (HH) is the simplest and most effective method to reduce nosocomial infections. So hand hygiene compliances in Fars health care centers measured in the first 6 months of 1393. In this study HH compliance rates at Fars health care facilities measured by two standard WHO Methods: Direct observation, indirect calculation based on alcohol base hand rub usage .Our result show that HH compliance in teaching hospitals was 39% and alcohol base HR use was 11%. HH compliance in non-teaching hospitals was 50% and alcohol base HR used was 17%. HH compliance in private hospitals was 38% and alcohol base HR was 50%. At the end, work load, over therapeutic & diagnostic procedures and inappropriate nurse to patient ratio are some effective causes of less HH compliance in teaching hospitals.

Hand washing behavior in the Single Professional Women's Hospital, Ommolbanin (SA)

ABSTRACT

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Introduction: Given the importance of nosocomial infections and the role of the medical staff in infection, this study aimed to evaluate the abandonment of staff of Ommolbanin single professional women hospital (SA) in Mashhad in the first six months of 1393.

Materials and Methods: This cross-sectional study was conducted among personnel of Ommolbanin hospital in Mashhad. Non-probability convenience sample of 100 was used. For the method of data collection and analysis of data from the Czech list of observations Spss software is used.

Results: The results showed that 48% of hand hygiene was in the department of Surgery, 44% in the department of obstetrics and 45% was in the emergency room. A total of 5-position hand hygiene behavior, the behavior of which 414 825 in respect of general hygiene in the three groups at 66/45% respectively.

Conclusion: The results showed that hand hygiene behavior among medical staff during the care of patients is low. Following the conclusion of the training class at periodic intervals and Czech personnel regarding hand washing is done.

Key words: Hand hygiene- Health Personnel- Nosocomial Infections

High frequency of extended-spectrum beta-lactamase producing *Escherichia coli* causing urinary tract infections and bloodstream infections in hospitals and community, Shiraz, Southern Iran

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ABSTRACT

Introduction: To investigate the frequency of extended-spectrum β -lactamase (ESBL) producing *Escherichia coli* (*E. coli*) causing bloodstream and urinary tract (UTIs) infections in Shiraz, Iran.

Materials and Methods: All consecutive *E. coli* strains isolated from blood in PACMRC from March 2013 to February 2014 were included. Those samples, sent from different hospitals, were obtained from patients with healthcare-associated and community-acquired infections (Group 1). Also, all consecutive *E. coli* strains isolated from urine of the patients with community-acquired UTI within July -November 2014 were included (Group 2). Double-disk synergy test was performed in order to determine ESBLs.

Result: Among 122 strains of group 1 and 104 of group 2, 64.5% and 69.2% were ESBL producer ($P=0.476$). Sensitivity rates to imipenem in group 1 and 2 were 95.5% and 98.1%, respectively ($P=0.346$). Sensitivity to third-generation cephalosporins was less than 40% in both groups with no statistically significant difference. Sensitivity rates to piperacillin/tazobactam and amikacin were 91.5% and 95.7% in group 1 and 82.7% and 78.8%, in group 2, respectively ($P=0.038$ and 0.0001). Rates to ciprofloxacin and gentamicin were 39.3% and 57.8% in group 1 and 61.5% and 75% in group 2, respectively ($P=0.011$ and 0.001).

Conclusion: Identification of ESBL among *E. coli* strains is common in Shiraz and is similar between strains isolated from blood and urine in hospital and community settings. The profile of antibiotic susceptibility to non-beta-lactam antibiotics was significantly different between strains isolated from blood and urine.

Keyword: *Escherichia coli*, Bloodstream Infection, Urinary Tract Infections, Beta-lactamases

Importance of hand hygiene in different religions

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ABSTRACT

Introduction: Personal hygiene is a key component of human well-being regardless of religion, culture or origin. Human health is related to behaviour, however, it results from the influence of multiple factors affected by the environment, education, and culture. According to behavioural theories, hand cleansing patterns are most likely to be established in the first 10 years of life. The attitude of handwashing in more specific opportunities is called “elective handwashing practice” and may more frequently correspond to some of the indications for hand hygiene during health-care delivery. In some populations, both inherent and elective hand hygiene practices are deeply influenced by cultural and religious factors. Even though it is very difficult to establish a strong inherent attitude towards hand hygiene, the potential impact of some religious habits is worth considering. Hand hygiene can be practiced for hygienic reasons, ritual reasons during religious ceremonies, and symbolic reasons in specific everyday life situations. Judaism, Islam and Sikhism, for example, have precise rules for handwashing included in the holy texts and this practice punctuates several crucial moments of the day. Therefore, a serious practicing believer is a careful observer of these indications, though it is well known that in some cases, such as with Judaism, religion underlies the very culture of the population in such a way that the two concepts become almost indistinguishable. As a consequence of this, even those who do not consider themselves strong believers behave according to religious principles in every day life. However, it is very difficult to establish inherent and elective behaviour in hand hygiene, deepseated in some communities, may influence HCWs’ attitude towards hand cleansing during health-care delivery. It is likely that those who are used to care about hand hygiene in their personal lives are more likely to be careful in their professional lives as well, and to consider hand hygiene as a duty to guarantee patient safety. Of the five basic tenets of Islam, observing regular prayer five times daily is one of the most important. Personal cleanliness is paramount to worship in Islam. Muslims must perform methodical ablutions before praying, and clear instructions are given in the holy Quran that precisely told how these should be carried out. The Prophet Mohammed always urged Muslims to wash hands frequently, especially after some clearly defined tasks. Thus, every observant Muslim is required to maintain scrupulous personal hygiene at five intervals throughout the day, aside from his/her usual routine of bathing as specified in the holy Quran. These habits transcend Muslims of all races, cultures and ages, emphasizing the importance ascribed to correct ablutions. In general, the indications given by Christ’s example refer more to spiritual behaviour, but the emphasis on this specific point of view does not imply that personal hygiene and body care are not important in the Christian way of life. Similarly, there are no specific indications regarding hand hygiene in daily life in the Buddhist faith, nor during ritual occasions, apart from the hygienic act of washing hands after each meal. Similarly, specific indications regarding hand hygiene are nonexistent in the Buddhist faith. No mention is made of hand cleansing in everyday life, nor during ritual occasions. Culture might also be an influential factor aside from religious background. In certain African countries (e.g. Ghana and some other West African countries) hand hygiene is commonly practiced in specific situations of daily life according to some ancient traditions. For instance, hands must always be washed before raising anything to one’s lips. In particular, no

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data are available on the impact of religious norms on hand hygiene compliance in health-care settings where religion is very deep-seated. This is a very interesting area for research in a global perspective, because this kind of information could be very useful to identify the best components of a program for hand hygiene promotion. It could be established that, in some contexts, emphasizing the link between religious and health issues may be very advantageous. Moreover, an assessment survey may also show that in populations with a high religious observance of hand hygiene, compliance with hand hygiene in health care will be higher than in other settings and, therefore, it does not need to be further strengthened or, at least, education strategies should be oriented towards different aspects of hand hygiene and patient care.

Inactivation of model viruses in human fresh frozen plasma using Vitamin B2

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ABSTRACT

Introduction: Pathogen reduction technologies are new methods to decrease transfusion transmitted infections. Mirasol method which use Riboflavin and ultraviolet rays is one of them. The aim of this study was to determine the effectiveness of this method to inactivate some model pathogens. As well as to determine the sensitivity of plasma proteins after treatment.

Materials and Methods: Riboflavin in 50 μ M concentration and Ultraviolet (365 nm wavelength) in three different energy doses (3.6, 7.2, and 10.8 j/cm²) was employed to inactivate model pathogens. Four standard viruses were used in this study *Vesicular stomatitis virus (VSV)*, *Herpes Simplex Virus 1 (HSV-1)*, *Bovine Viral Diarrhea Virus (BVDV)* and *Polio Virus*. 50% Tissue Culture Infectious Dose (TCID₅₀) and Reed–Muench Methods were used to estimate viruses' titers.

Results: The most pathogen reduction was determined to be in 15 minutes irradiation or 10.8 J/cm² which was Log 6.10 for BVDV, Log 6.09 for HSV-1, Log 6.62 for VSV and Log 3.36 for Polio.

Conclusion: Results showed this method can inactivate most of the viruses in fresh frozen plasma and enveloped viruses are more sensitive to this inactivation method.

Keywords: Inactivation, Viruses, Fresh Frozen Plasma, Vitamin B2

Infection In Intensive Care Unit

ABSTRACT

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Introduction: Although ICUs constitute less than 10% of total beds in most hospitals, more than 20% of all nosocomial infections are acquired in ICUs. ICU-acquired infections account for substantial morbidity, mortality, and hospital costs. Infections and sepsis are the leading causes of death in noncardiac ICUs and account for 40% of all ICU expenditures. As the number of ICU beds increases, the proportion of ICU infections is likely to increase, putting more strains on health care costs. Patients in critical care settings are more susceptible to nosocomial infections. Overall, compared with the general hospital population, patients in ICUs have more chronic comorbid illnesses and more severe acute physiologic derangements.

Elderly patients treated with central catheter and/or mechanical ventilation devices in intensive care units (ICUs), admitted from the emergency department or as an urgent case, are at very high risk for hospital-acquired infection (HAI), according to the results of research presented here at the 22nd European Congress of Clinical Microbiology and Infectious Diseases.

In-hospital mortality in ICU patients with HAI was 4 times higher than in those without HAI, according to this analysis of an American hospital database central catheter or mechanical ventilation, trebled the risk of having a HAI, including bloodstream infection, nosocomial pneumonia, and surgical-site infection. She added that mortality was 4 times higher in patients with a HAI than in those without. In patients with HAI, length of stay in the ICU doubled, from a mean of 8.1 days to 15.8 days. Bloodstream infection was the greatest driver of mortality, at 24.7%, followed by hospital-acquired pneumonia, at 16.7%, and surgical-site infection, at 10.9%.

Furthermore, in another study in Spain they confirmed that the 3 nosocomial infections in ICU patients including, sepsis, surgical-site infection, and hospital-acquired pneumonia, generate an economic and clinical burden in the hospital setting.

In conclusion, hospital-acquired infections have profound social, economic, and personal costs to patients in the intensive care unit (ICU). Numerous risk factors, such as poor nutrition and hyperglycemia, directly involve patients. Meanwhile, hand hygiene, environmental cleaning, and appropriate hospital staffing can impact ICU infection rates. A multidirectional approach-including continuing staff education, minimizing risk factors, and implementing guidelines established by national committees-is necessary to decrease infections such as catheter-related bloodstream infections, urinary tract infections, ventilator-associated pneumonia, and *Clostridium difficile*.

Infection-control committees can assist in implementing policies. This is an active area of research and we anticipate continued advancements to improve patient care.

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Infective endocarditis among intravenous drug users

ABSTRACT

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Introduction: Infective endocarditis is a common infection among intravenous drug users and can cause high mortality and morbidity.

Materials and Methods: In a retrospective study we evaluated 33 intravenous drug users with documented infective endocarditis in two tertiary care hospitals in Tehran, Iran; Imam Hosein and Loghman Hakim hospitals during 6 years. Demographic information, clinical manifestation, radiologic, laboratory and echocardiographic data were evaluated.

Results: 2% of patients were in 20-40 years old age group. The most common symptoms were fever, cough, dyspnea and lower extremities edema. The most common involved valve was tricuspid with frequency of %45, followed by mitral, aortic and pulmonary valves. Anemia was observed in 95%, leukocytosis in 55%, thrombocytopenia in 35%, leukopenia in 10% and elevated ESR in 70% of patients. Of total patients, 3 were HIV and 2 were HCV positive. Positive blood culture was observed only in %40 of cases that may be due to sampling error or previously antibiotic misuse by patients. The most common isolated organism was *Staphylococcus aureus*. Mortality rate was 55% in our study.

Conclusion: Endocarditis in intravenous drug users had high mortality rate in this study. Positivity of blood culture was low.

Keywords: Endocarditis, intravenous drug users, mortality

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Investigate the colonization of *Staphylococcus aureus* among patients admitted to an infectious diseases ward

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ABSTRACT

Introduction: *Staphylococcus aureus* colonization is among the most important risk factors of staphylococcal infections. Anterior nasopharynx are the most common location for the colonization of *S. aureus*. Many of the patients admitted to infectious disease ward would probably be carriers of *S. aureus* especially its methicillin-resistant strains. In this study, we intended to identify all patients who were upon admission and compare the prevalence of MRSA colonization on different days of study.

Materials and Methods: In this cross-sectional study we collected samples from anterior nares of 600 patients admitted in Infectious disease ward of Imam Reza hospital, Mashhad. Before we collect nasal swabs, patients filled out a survey questionnaire. After identification of the isolates, their susceptibility to methicillin was evaluated.

Results: *Staphylococcus aureus* colonization early after hospitalization was observed in 39.8% (n=239) of patients, of which 59% (n=141) were resistant to methicillin. In the third day of admission, *S. aureus* new colonization rate was 15.8% (n=57), of which 87.7% (n=50) were methicillin resistant. In the seventh day, *S. aureus* bacteria had been colonized in 13% (n=32) patients, of which 90.6% (n=29) were methicillin-resistant. Upon discharge, 8.2% (n=13) patients had been colonized, of which 92.3% (n=12) were resistant to methicillin.

Conclusion: Most of the carriers had the methicillin resistant strains of bacteria at the time of admission, and the colonization rate increased in time. The most common risk factors in methicillin-resistant *S. aureus* carriers were taking antibiotic, history of prior hospitalization and intravenous (IV) drug abuse.

Key words: *Staphylococcus aureus*, colonization, methicillin resistance, nosocomial infection

Investigation of clonal relation of clinical and environmental Vancomycin Resistance *Enterococcus faecium* isolates at Intensive Care Units in Tehran Hospitals

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ABSTRACT

Introduction: Vancomycin Resistance *Enterococcus faecium* (VRE_{fm}) is among the most frequent causes of nosocomial infections. Epidemiological studies have showed the role of Medical equipments and the patient's surrounding environment in the spread of these strains in the hospitals. In this study we aimed to analyze the clonal relation of *E. faecium* strains at the Intensive Care Unit (ICU) of four University Hospitals in Tehran.

Materials and Methods: In this study, the antibiotic resistance patterns, clonal relation and genetic features of 59 VRE_{fm} strains isolated from patients and ICU environments in four university hospitals in Tehran during 2012-2013 were analyzed by antibiogram, pulsed field gel electrophoresis (PFGE) and Multi-Locus Sequence Typing (MLST).

Results: Results from antimicrobial susceptibility showed that all of VRE_{fm} strains were multiple resistant to selected antibiotics. PFGE analysis showed three pulsotypes were shared by clinical and environmental VRE_{fm} isolates. According to MLST analysis two sequence types (STs) were identified in both of clinical and environmental isolates.

Conclusion: Detection of multiple resistance and genetic related of VRE_{fm} strains in medical equipments of ICU's environment verified the spread high risk *E. faecium* clones among the patients and hospitals environments.

Keywords: *Enterococcus faecium*, clone, ICU

Mode of acceptance and improve standards, control of hepatitis B virus infection by health care workers

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ABSTRACT

Introduction: Acceptance and use of standards to control hepatitis B virus infection is important by health care workers. This study aimed to determine the acceptance and promotion of infection control standards in three scopes before, during and after exposure to risky job.

Materials and Methods: This cross-sectional study was conducted on 135 health care workers. The two-stage cluster sampling method was used. The data instrument was checklist for subtle performance Observation, seven factors were recorded and score range was "acceptable, desirable and undesirable". Data were analyzed with SPSS software v19 using chi-square test, correlation and Friedman.

Results: The rate of health care workers about acceptance of standards in Hepatitis B virus infection-control was 59.35% in domains 2 factor 1, 48.88% in domains 7 factors 3 and 45.92% in domains 4 factors 2 ($P<0.05$). Laboratory personnel had highest standards ($p=0.0016$). Minimum acceptable performance to arrange was allocated to the 5 domains 2 (non-use of syringes A.D) with 87 %, a factor of 2 domain 1(Do not use alcohol on a cotton breaking glass in shots or injections) with 85 % and the 6 domains 3 (not reported needle stick injuries in health care) with 57 %.

Conclusion: More than half of the Health care workers were relatively favorable behaviors and unfavorable. Therefore, using this study is expected in 100% of health care workers, Hepatitis B virus infection -control standards after a period of training is planned to operate.

Keywords: Infection control, hepatitis B virus, health care workers, Preventive behaviors

Molecular epidemiology of carbapenem resistance *Acinetobacter baumannii* in Imam Reza Hospital, Mashhad

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ABSTRACT

Introduction: *Acinetobacter baumannii* is mostly cause of septicemia, pneumonia and urinary tract infection following hospitalization of patients with more severe illness. Carbapenem resistance in this species is now observed increasingly worldwide, and constitutes a sentinel event for emerging antimicrobial resistance. The most widespread β -lactamases with carbapenemase activity in *A. baumannii* are carbapenem-hydrolysing class D β -lactamases (CHDLs) that are mostly specific for this species. These enzymes belong to three unrelated groups of clavulanic acid-resistant β -lactamases, represented by OXA-23, OXA-24 and OXA-51, blaVIM, blaIMP. The goal of this study was to determine frequency of the important genes that corresponds the carbapenem resistance in *A. Baumannii*.

Materials and Methods: Fifty-four *Acinetobacter Baumannii* isolated from Imam Reza hospital during October 2013 to March 2014 were studied. Resistance profile of isolate to different carbapenem antibiotics were determined by Kirby-bauer method. Extraction of DNA was done by boiling method. Detection of OXA-23, OXA-24 and OXA-58 was done by Polymerase Chain Reaction method. Genetic relationship of all isolates was determined by REP-PCR method.

Results: Out of 54 examined isolates, 100% (54), 96.3% (52) and 100% (54) were resistance to imipenem, cefepime and piperacilline/tazobactam, respectively. OXA-23, OXA-24, OXA-51, blaVIM and blaIMP was detected in 66.7% (36), 74.1% (40), 100% (54), 70.4% (38) and 70.4% (38), respectively. REP-PCR results showed that isolates were belonged to one genotype.

Conclusion: Based on the obtained results, rate of carbapenem resistance gene 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*, Carbapenem resistance, PCR

Molecular epidemiology of MBL-Producing *Acinetobacter baumannii* in western Iran

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ABSTRACT

Introduction: Carbapenem-resistant *A. baumannii* has been isolated highly in recent years. Metallo- β -lactamases (MBLs) have been detected and reported from *A. baumannii* producing carbapenemases in recent times. The aim of this study was to determine both phenotypic and Genotyping of MBL producing *A. baumannii* isolates.

Materials and Methods: A total of 110 *Acinetobacter* spp. were cultured from clinical specimens of hospitals of Kermanshah in western. To screen for the MBLs, E-test strips (AB Biodisk, Solna, Sweden) were used according as per the manufacturer's instructions. DNA genomic of *A. baumannii* isolates were SmaI-digested and analyzed by CHEF Mapper PFGE. **Results:** 89 (80.9%) of isolates producing MBL by E-test MBL. 68 of that 89 isolates collected from ICU and 16 from emergency and 5 from children ward. Of 89 MBL producing *A. baumannii* tested were recovered from ICU 68 (76.4%), emergency wards 16 (17.9%), and pediatric wards 5 (5.6%). Among 47 MBL producing *A. baumannii* that selected for Pulsed-field gel electrophoresis analysis, we obtained 7 pulsotypes that including 4 common types and had 3 single types.

Conclusions: MBL producing *A. baumannii* has severely limited therapeutic options. The high MBL producing isolates found in this study may be associated with the high frequency at which these antimicrobial drugs were used for both prophylactic and therapeutic treatment of hospitalized. Our study showed that most of the isolates of *A. baumannii* were obtained from ICU and most members of clone A were collected from this ward. Presence of Clone A in ICU ward is warning.

Keywords: *Acinetobacter baumannii*, OXA-type, PFGE

Molecular identification and antifungal susceptibility patterns of *Candida* spp. recovered from endotracheal tube biofilms in intensive care unit patients

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ABSTRACT

Introduction: Device-related infections in most nosocomial diseases can be traced to the formation of biofilms by pathogens on surfaces of these devices. *Candida* species are the most common fungi isolated from these infections, and biofilms formed by these fungal organisms are associated with drastically enhanced resistance against most antimicrobial agents. The aim of this study was to identify and determine the antifungal susceptibility pattern of *Candida* spp. isolated from endotracheal tubes from ICU patients.

Materials and Method: From the central region of each endotracheal tube 1cm section was cut and processed for quantitative microbial culture. Samples were cultured on Sabouraud Dextrose agar and DNA extraction was performed by glass beads. ITS1-5.8S-ITS2 region was amplified by PCR and was digested by the restriction enzyme *MspI*. Antifungal susceptibility testing was determined according to recommendations stated in the Clinical and Laboratory Standards Institute (CLSI) M27-A3 document.

Results: ninety isolates were evaluated from samples which *C. albicans* (42.3%) was the most frequently isolated species followed by other species of *Candida* included *C. glabrata* (25%), *C. tropicalis* (21.7%), and *C. krusei* (10.8%). The resulting MIC₉₀ for all *candida* species were in increasing order, as follows: caspofungin (0.5µg/ml); voriconazole (8.8µg/ml); amphotericin B (2 µg/ml); itraconazole (16 µg/ml); and fluconazole (64 µg/ml).

Discussion: The results showed that yeast biofilms can form on the surface of endotracheal tubes. *Candida* species are the yeasts which were isolated from these surfaces of infectious patients. Knowledge about the susceptibility patterns of colonized *Candida* spp. can be helpful for clinicians to manage intensive care unit patients.

Keywords: endotracheal tubes, *Candida* spp., PCR-RFLP, antifungal susceptibility

Multi drug resistant Acinetobacter in Iran

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ABSTRACT

Introduction: Acinetobacter have become increasingly resistant to antibiotics and currently present a significant challenge in treating these infections.

Materials and Methods: In a prospective study we evaluated 100 positive cultures of Acinetobacter from 100 patients in seven tertiary care hospitals in Tehran, Iran. PCR was used to determine the species of Acinetobacter. E-test and Disk diffusion method was used to determine the resistance of isolated Acinetobacter baumannii and non-baumannii. Antimicrobial sensitivity to several antibiotics was analyzed.

Results: In our study 89% of isolated Acinetobacter was baumannii and 11% was non- baumannii. The most incriminated wards were intensive care and burn units. Acinetobacter was isolated from respiratory secretion in 38%, wound in 29%, tip of catheter in 14%, urine in 8%, blood in 4%, CSF in 4%, pleural fluid in 2% and brain abscess in 1% of samples. Acinetobacter was resistant to amikacin and ceftazidime in 100%, to cefepime in 94.5%, to piperacillin-tazobactam in 83% and to imipenem in 64% of all samples. Sensitivity to colistin was 100% and to tigecycline was 74.5% in our study.

Conclusion: Prevalence of cephalosporins and carbapenem resistant acinetobacter was high in our study. Colistin and tigecycline are best choices for treatment of acinetobacter.

Keywords: Acinetobacter, antibiotics, resistant

Multidrug resistance and detection of class 1, 2, and 3 integrons among clinical *Klebsiella pneumoniae* isolated from Intensive Care Unit (ICU) patients of two hospitals in Tehran

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ABSTRACT

Introduction: Multiple drug resistance has significantly increased in recent years among *Klebsiella pneumoniae* isolates. Integrons are mobile genetic elements which carry antibiotic resistance genes. The aims of this study were to determine antibiotic susceptibility and the prevalence of class 1, 2, and 3 integrons among the *Klebsiella pneumoniae* isolated from Intensive Care Unit (ICU) patients of two hospitals in Tehran, Iran.

Materials and Methods: Thirty-three *K. pneumoniae* isolates were collected between April and December 2011 from different clinical samples of patients admitted to the ICUs of two hospitals in Tehran (Imam Khomeini and Milad) and identified by biochemical tests. Susceptibility of isolates to 14 antibiotic disks was determined using agar disk diffusion method. The template DNA was then extracted and the presence of class 1, 2, and 3 integrons was investigated by PCR. Level of resistance to antibiotics in integron-positive and integron-negative isolates was then determined.

Results: All isolates were susceptible to imipenem. The highest level of resistance was seen for amoxicillin-clavulanic acid, tobramycin (81.8%, each), cefotaxime, ceftriaxone, aztreonam, gentamicin (78.8%, each). 25 isolates (75.7%) carried class 1 integrons and 18 of 25 isolates (72%) showed resistance to at least two classes of drugs. The class 2 integron was detected in only one isolate. The class 3 integron was not detected. Among 8 integron-negative isolates, all isolates showed resistance to at least two classes of antibiotics.

Conclusion: This study showed that the frequency of class 1 integron-positive strains of *K. pneumoniae* is high in ICU. Carbapenems were the most effective drugs against these strains. Because ICU patients are at high risk, continued monitoring of drug resistance and limiting the use of antibiotics are necessary in clinical settings.

Keywords: *Klebsiella pneumoniae*, Integron, Multi-drug resistance, Intensive Care Unit

Nosocomial infection and biofilm formation in catheters by *Acinetobacter* spp and *E.coli*, isolated in Kerman hospitals, Iran

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ABSTRACT

Introduction: Nosocomial infection called to those infections occurred by host contacting infection factor in a hospital. Thus, infection symptoms may manifest 48-72 hours after hospitalization or discharge from hospital.

Materials and Methods: All isolates were characterized with conventional biochemical methods. Antibacterial sensitivity tests were carried out with nineteen antibiotics by disc-diffusion technique. MICs of all isolates were determined against seven important antibiotics by agar dilution method. Biofilm formations of strains with high Cell surface hydrophobicity were determined on different surfaces of glass, polypropylene, polycarbonate and venous catheter.

Result: Thirty seven isolates identified as *Acinetobacter* (23%), *E.coli* (14). According to Antibiotics susceptibility tests, all strains were resistant to Quinolons (83.7%), Tetracyclin (48.9%), Carbapenems (55.3%) and Colistin (15%). MIC of seven antibiotics except Colistin against all isolates was more than 128 µg/ml. Results of biofilm formation for selected isolates on glass and polypropylene tubes showed that denser aggregates on polypropylene tubes than on the glass surfaces.

Conclusion: According to biofilm formation of some bacterial strains in catheters, the above mentioned can be used in developing programs to prevent and control such nosocomial infections distributing via medical devices.

Keywords: nosocomial infection; antibiotic resistant; biofilm formation; venous catheter

Nosocomial Infection in Patients at hematology-oncology ward of Dr. Sheikh children's hospital

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ABSTRACT

Introduction: Infections in critical care unit are high and are serious hospital problem. Infections acquired during the hospital stay are generally called nosocomial infections, initially known as infections arising after 48 h of hospital admission. The most frequent nosocomial infections (urinary, respiratory, gastroenteritis and blood stream infection) were common in patients at hospital. The aim of this study was to determine the current status of nosocomial infection, and rate of infection among hospitalized children in hematology-oncology ward at Dr. Sheikh children's hospital.

Materials and Methods: Data were collected from 200 patient's records presented with symptoms of nosocomial infection at hematology-oncology ward in Dr. Sheikh children's hospital, from March 2014 to September 2014. Descriptive statistics using percentage was calculated.

Results: Incidence of nosocomial infections in hematology-oncology ward patients was 30% (60/200). Of which 17.91% (43/200) blood stream infection being the most frequent; followed by 9.5% (19/200) was urinary tract infection (UTI).

Conclusion: This study showed blood stream infection and UTI are the common nosocomial infections among patients in hematology-oncology ward. Early recognition of infections and short term use of invasive devices along with proper infection control procedures can significantly decrease the incidence of nosocomial infections in patients.

Keywords: Nosocomial infection, urinary, respiratory, gastroenteritis, blood stream infection

Point prevalence and surveillance of hospital acquired infections in surgical wards of a university-affiliated hospital in Mashhad, Iran

ABSTRACT

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Introduction: Hospital-acquired infection (HAI) is a major problem for patient safety and its surveillance. The aim of this study was to evaluate the local epidemiology of HAIs and surveillance of surgical site infections in surgical wards.

Materials and Methods: The study was designed as a point prevalence survey measured at two points (16Dec2012 and 8Jan2014) with one-month surveillance for surgical site infections in a university-affiliated hospital. 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. An infection was defined to be hospital acquired using the 2013 CDC criteria.

Results: During the 2 point prevalence surveys, a total of 23 patients with HAIs were identified among 329 patients (6.9%). A total of 29 HAIs were reported which the most frequent HAIs were surgical site infections (SSIs; 3.6%) and symptomatic urinary tract infections (SUTI; 1.8%). After 30-day surveillance for surgical site infections, we could follow 191 patients (58.2%) which, 6 of them (3.1%) developed surgical site infections and 7 of them (3.6%) expired. Antibiotics were administered to 65.3% of patients, although only 6.9% of them had at least one documented HAI.

Conclusion: HAIs in surgical wards of Imam Reza hospital is lower than other studies. Empirical antibiotic therapies without sending appropriate cultures and prolong use of prophylactic antibiotics are two important reasons.

Keywords: acquired infections, surgical wards

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Predisposing factors of neonatal conjunctivitis in NICU ward of Tabriz Children Hospital

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ABSTRACT

Introduction: Contaminations of eyes with water borne organisms (Humidity of Incubators) or respiratory secretions and infected hands of personnel or transmission via infected catheters using for suction of secretions are the most important predisposing factors of conjunctivitis in neonatal intensive care units.

Materials and Methods: In this descriptive and cross-sectional study, predisposing factors of eye infections in hospitalized newborns in NICU that their infections were documented based on physician's diagnosis and resulted in using antibiotics were reported by standard check lists and data analyzed by SPSS.

Results: 50 of 646 newborn admitted in NICU in 1392 suffered from conjunctivitis (7.7%). Infection in 72.6% of patients was bilateral. 36% of newborns were preterm. Intubation and mechanical ventilation (48.4), suctioning of secretions (69%), NG Tube (79.4), photo therapy (56.5), prone position (46.7), HFNC (46.7) nebulizer (54.8), and contact with infected hands (63.1) are the major risk factors.

Conclusion: Considering these results that are comparable with other studies, contaminated hand of personnel and care givers, use of eye pads, phototherapy, Intubation, suction of secretions, oxygen therapy via hoods are the main risk factors of conjunctivitis in newborns especially in NICUs. Therefore hand hygiene, sterile eye washing and using aseptic techniques are recommended.

Key Words: NICU, Conjunctivitis, Nosocomial Infection

Prevalence of bla_{TEM}, bla_{IMP}, bla_{VIM} and bla_{ADC} genes in Extended-Spectrum β -Lactamase-producing *Acinetobacter Baumannii* in burn unit of Imam Reza hospital, Mashhad

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ABSTRACT

Introduction: *Escherichia coli* expressing extended-spectrum β -lactamase (ESBL) is among the most multidrug-resistant pathogens in hospitals and is 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 recently increased 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

Prevalence of Methicillin-Resistant *Staphylococcus aureus* in Imam Reza hospital, Mashhad, during 2012 to 2014

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ABSTRACT

Introduction: *Staphylococcus aureus* is an opportunistic pathogen often carried asymptotically on the human body. Methicillin-resistant *S. aureus* (MRSA) strains have acquired a gene that makes them resistant to all betalactam antibiotics. Hospital-associated strains of this organism are serious nosocomial pathogens that have become resistant to most common antibiotics, and treatment can be challenging. The purpose of the study described here was to evaluate MRSA infection in Imam Reza hospital in Mashhad.

Materials and Methods: During 2013 to 2014, *Staphylococcus aureus* isolates detection was done based on morphologic test in Microbiology laboratory of Imam Reza hospital. Detection of MRSA strain was carried out based on antibiotic susceptibility tests for cefoxitin (Rosco, Denmark) according to CLSI 2012 guideline.

Results: During time of study a total of 656 *Staphylococcus aureus* isolates were diagnosed. MRSA prevalence was 289 (44%). There was a decrease in the frequency of MRSA, from 45 % in 2013 to 42% in 2014.

Conclusion: Recent data of two past years, however, revealed declining numbers of MRSA cases in Imam Reza hospital, Mashhad. These results indicated the efficient practice of infection control unit of the hospital.

Keywords: *Staphylococcus aureus*, Methicillin, Resistant

Prevention of peritonitis in children under peritoneal dialysis

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ABSTRACT

Peritoneal dialysis (PD) is the modality of choice for pediatric patients with end stage renal disease (ESRD) all over the world. Infectious complications remain as the most significant cause for morbidity and mortality in receiving continuous ambulatory peritoneal dialysis (CAPD), and are the primary reason for switching from PD to hemodialysis (HD). Severe and prolonged peritonitis can lead to peritoneal membrane failure and peritonitis is probably the most common cause of technique failure in PD.

Reducing the frequency of peritonitis in PD patients include proper catheter placement by experienced pediatric surgeon, catheter-related interventions (catheter selection, implantation technique, exit-site orientation), experienced nurse with pediatric training, prophylactic antibiotics before PD catheter placement, acute and chronic exit-site care (dressing protocols and application of an exit-site antibiotic that includes Staphylococcus aureus prophylaxis with either mupirocin or gentamicin cream), careful training of patients with periodic retraining such as washing hands or wearing a mask, treatment of contamination, and prevention of procedure-related and fungal peritonitis.

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Therefore, to improve outcomes in pediatric PD patients, attentions must be focused on preventing peritonitis, although appropriate treatment is important in the event of an infection.

Hand hygiene and Clean Care is Safer Care

Professor Didier Pittet

ABSTRACT

Introduction: Launched in 2005, the World Health Organization (WHO) First Global Patient Safety Challenge Clean Care is Safer Care fosters partnerships and nationally-coordinated activities to reduce infections through improved hand hygiene in healthcare worldwide. By 2014, more than 135 of the 194 United Nations' member states had pledged their support to implement actions to reduce hospital infections, corresponding to 93.5% coverage of the world population. Between 2009 and 2014, over 17,000 hospitals from 179 countries joined its sister initiative SAVE LIVES: Clean Your Hands. The next challenge is to convince and mobilize the private sector, governments, and patients to join forces with the potential to save 8 millions of lives each year worldwide.

The "My 5 Moments for Hand Hygiene" approach, developed at the University of Geneva Hospitals, defines the key moments when healthcare workers should perform hand hygiene and is intended to meet the needs for training, observation, and performance reporting across all healthcare settings worldwide. This evidence-based, field-tested, user-centered approach is also integrated in various tools included in the WHO Multimodal Hand Hygiene Improvement Strategy. This approach recommends healthcare workers to clean their hands: before touching a patient; before clean/aseptic procedures; after body fluid exposure/risk; after touching a patient; and after touching patient surroundings. An additional concept critical to the understanding of hand hygiene is the term point of care. The point of care is exactly where the care action takes place and is defined as "the place where three elements come together: the patient, the healthcare worker, and care or treatment involving contact with the patient".

Although the basic principles of infection control and hand hygiene are the same in all health-care settings worldwide, outpatient care presents specific challenges related to the application of the World Health Organization (WHO) "My five moments for hand hygiene" approach and the implementation of the WHO Multimodal Hand Hygiene Improvement Strategy. Several questions have emerged about the transmission and infection risks and the application of hand hygiene concepts in these settings following the issue of the WHO Guidelines. In addition, there has been a significant shift in healthcare delivery and an increasing number of procedures are now performed today in ambulatory or home-based settings, especially in high-risk patients. While the basic concepts of prevention and control of infection remain unchanged, the great variety of patient surroundings in outpatient settings needs special consideration. Forthcoming challenges include topics as diverse as: adapting strategies for ambulatory care, outpatient and long term care facilities, sustaining effective promotion and overcoming campaign fatigue.

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Role of Environmental factors in preventing transmission of Parvovirus B19 in pregnant women

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ABSTRACT

Introduction: The incidence of acute parvovirus B19 infection in pregnancy is approximately 1% to 2% in endemic periods, but can exceed 10% in epidemics. Parvovirus B19 infection during pregnancy is mostly asymptomatic, but in approximately 3% of infected women, it might cause a range of complications, including abortion, severe fetal anemia, nonimmune hydrops fetalis, and even fetal demise. Several factors have been associated with an increased risk of acute parvovirus B19 infection among pregnant women. Some of the important factors summarized as a number of children, occupations, public and private health criteria.

Materials and Methods: In this cross-sectional study, totally 625 pregnant women who attended for prenatal care in health service centers associated to Alzahra Gynecology center of Tabriz University of Medical Sciences from April 2010 to May 2013. They are in the ages between 25-35 years old and evaluated for IgG and IgM parvovirus specific antibodies using ELISA technique. They referred 362 (57.92%), 143 (22.88%), 120 (19.2%) cases in first, second, third trimesters respectively.

Results: Total of 625 pregnant women were studied in five age groups, ranged by 4yr intervals (25-35). We have analyzed seroepidemiologic findings based on serologic statuses of subjects, such as 432 G+M- (69.12%), 164 G-M- (26.24%), 26 G+M+ (4.16%), 3 G-M+ (0.48 %).

Conclusion: Studies of seroepidemiology of parvovirus B19 in several countries and Iran have shown that the majority of our childbearing and pregnant women population have contacted with parvovirus B19.

Keywords: parvovirus B19- infection- female population

Safe Surgery

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ABSTRACT

Introduction: Considerable research over the last 10-15 years has been done and provides pathways to significant decreases in surgical site infection rates following clean and clean/contaminated operation. This has been very much helped by new mathematical techniques and the GRADE process for rating evidence quality.

This lecture will review recommendations being developed for CDC and WHO guidelines, and evidence of use of the WHO surgical checklist.

The key recommendations deal firstly with the central importance of a surveillance system that reports to surgeons and OR personnel infection rates seen. Continuous vs. period prevalence surveillance will be described.

Other areas include:

- Surgical site skin preparation
- Timing of antibiotic prophylaxis (<60 minutes pre-incision, redosed at 3 hours based on antibiotic used, no post-operative antibiotics)
- Use of high concentrations of oxygen
- Maintenance of normothermia
- Glucose control

The safe surgery checklist implements some of these recommendations, but more importantly serves as a device to increase interactions between anesthesiologists, surgeons, and nursing. The checklist is part of a larger effort, termed SUSP (Surgical Unit-based Safety Program) to improve patient safety by empowering staff communication.

There are important opportunities to provide safer surgery, benefiting the patient and all involved in the care of surgical patients. How to implement evidence-based practices has really become the next frontier in this work.

SCCmec typing of methicillin-resistant *Staphylococcus aureus* isolates collected from patients in Zabol University Hospitals

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ABSTRACT

Introduction: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major cause of nosocomial infections and is associated with prolonged length of hospitalization, morbidity, and mortality. MRSA is caused by expression of the low-affinity penicillin-binding protein (PBP2a) encoded by the *mecA* gene. This gene is carried on the staphylococcal cassette chromosome *mec* (SCCmec) of which several types and subtypes have been described. SCCmec typing is an essential component of an effective surveillance system to describe epidemiological trends and infection control strategies. For this reason, in this study we investigated SCCmec typing of *Staphylococcus aureus* isolated in Zabol hospitals.

Materials and Methods: This study was conducted on *S. aureus* isolates collected from patient admitted in teaching hospitals in Zabol city from March to September of 2014. A total of 100 *S. aureus* clinical isolates were analyzed using standard microbiological methods. Multiplex PCR was performed on genomic DNA from MRSA isolates in order to identify the types of SCCmec.

Results: Results from SCCmec typing revealed that 5% were type I; 45% were type II; 30% were type III, and 20% were type V.

Conclusion: The prevalence of SCCmec type II is dominant in teaching hospital settings in Zabol, highlighting the importance of their rapid identification in order to appropriately control infection.

Keywords: SCCmec typing, Methicillin-resistant *Staphylococcus aureus*, *mecA* gene

Study of infection in hemodialysis catheter that operated in vascular surgery ward at Mashhad University of Medical Sciences

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ABSTRACT

Introduction: For hemodialysis vascular access plenty of blood is necessary. Cuffed catheters and non cuffed catheters using a central vein are adequate for these patients. One problem that threatens the lives of patients is complications of catheters. Infection is a common complication of catheters. In this study, we investigated the complications of hemodialysis catheters, particularly infection.

Materials and Methods: Over a period of 2 years for patients with renal failure requiring dialysis of 307 double-lumen hemodialysis catheters had been inserted in vascular surgery ward of Mashhad University of Medical Sciences. At the end of the follow-up study, 226 patients with complications were provided. Complications especially the infection in these patients depending on the type of catheter, cuffed or non cuffed catheter evaluated and was compared with the incidence in other studies.

Results: Of 226 patients who were implanted catheter, rate of non cuff catheter and cuffed catheter were 201 and 25, respectively. Catheter infection was the most common complication (41 cases, 18.1%). Other complications include dysfunction (30 cases, 13.3%), hematoma (11 cases, 4.9%). Infection of the non cuff catheter was seen in 35 cases (15.5%) and 6 cases (2.6%) in cuffed catheter. There was no significant relationship between age and gender with complications.

Conclusion: The rate of infection in hemodialysis catheters in this study was 18.1% that was more than reported in previous studies (2.5 to 5.7 percent). This study resulted in attention to techniques to prevent infection, including compliance with all points of sterility during insertion and use in dialysis centers.

Keywords: Hemodialysis Catheters, Central venous catheter infection, Double-lumen catheter

The assessment of needle sticks exposure in staff of operation room

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ABSTRACT

Introduction: Needle stick is one of the causes of exposure of health care workers to blood infectious diseases such as: Hepatitis B, C and HIV. Operation room is one of the places that personnel are at risk of exposure with scalpel injuries. Therefore, this study performed to assess needle stick exposure in staff of operation room of Borujen and Lordegan hospitals.

Materials and Methods: This study is a descriptive study that was carried out on 77 staff of operation room of Borujen Valiasr & Lordegan Seyedalshohada hospitals. Data were gathered by needle stick questionnaire and was analyzed by descriptive statistics and chi square tests.

Results: Results showed 42.85% of volunteers were male and 57.15% of them were female and there was no significant difference between males and females in needle stick exposure. 45.45% of them had history of needle stick exposure at least for 1 order. Most common cause of damage was needle of syringe, suture scalp and bistury. 100% of staff agrees to attend courses about prevention of needle stick.

Conclusion: With attention to high prevalence of needle stick in OR, it seems that codify and perform courses about prevention of needle stick is very necessary.

Key word: Operating Room Staff, Infection, Needle sticks Injuries

The Frequency of Healthcare associated Pneumonia in 2 ICUs in Nemazi hospital

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ABSTRACT

Introduction: Healthcare associated pneumonia is defined as the development of pneumonia at least 48 hours after hospitalization, and not incubating at the time of admission. It's the leading cause of morbidity & mortality from nosocomial infections. HCAP is estimated at rate of 5-10 % cases per 1000 hospital admissions accounting for approximately 13-18 % of all nosocomial infections. Because of high morbidity & mortality of HCAP, we decided to perform a study in 2 ICUs in Nemazi Hospital. In a study in this hospital during 2008-2009, 58% of ICU patients were reported as pneumonia.

Materials and Methods: This is a prospective, cohort, cross-sectional study from Dei till Esfand 1392 in 2 ICUs (Emergency & General) in Nemazi hospital. This study is based on CDC criteria of HCAP (January 2014) that is included fever, leukopenia or leukocytosis and at least 2 of the signs and symptoms. All the patients were visited actively & these questions were answered for all of them.

Result: In this study in 2 ICUs from Dei till Esfand 1392, 62 intubated patients were evaluated. All the patients were between 23 to 90 years old and 54% of them were male. The mean admission day was 9.6. The rate of pneumonia was 37%. 29% of these patients had HTN and 25 % of them had IHD. 46.8% of cases were received vancomycin, 40.3% meropenem, and 21% of these cases were received Ceftriaxone.

Conclusion: Healthcare associated pneumonia is a tremendous risk factor in ICU patients and can prolong hospitalization.

Keywords: Pneumonia, Leukopenia, HCAP, ICU.

The frequency of injuries from sharp instruments contaminated by blood in staff of operating room of martyr ganji and 17 sharivar Borazjan in 1392

ABSTRACT

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Introduction: Needle stick injury and skin penetration from sharp instruments contaminated with blood or body fluids of patients, medical and health care sector is the biggest factor threatening employees. Extra care needs to needle stick injuries; they are usually mild but the risk of viral infection remains. Studies have shown that average of needle stick experience in medical staff per year is 1-9 times a. In a study conducted by the World Health Organization WHO Eastern Mediterranean region has been found that each of the health sector could become needle stick average of 4 times per year.

Materials and Methods: This research is a descriptive study based on hospital operating room personnel and 17 Shahrivar Borazjan martyr fit 45 of them have been performed. For data collection, questionnaire was used. Data analyzed using Spss software version 15 and chi-square tests, mean and standard deviation were performed.

Results: After reviewing the data, it was found that 7/68% female had mean age \pm standard deviation (37.4 ± 7.07) years old, 85 Percent of employees were damaged with sharp instruments five times at year during their service, and there was no significant difference between men and women. About 85% of workers in the study were exposed to sharp instruments contaminated with blood. The most common means of damage were syringe, needle and scalpel. All personnel agreed to training courses and remember to take care of blood contamination.

Conclusion: The results indicate that:

- 1: almost the majority of operating room personnel had faced with needle stick.
- 2: Taking the time to needle stick Mvajh staff at peak hours is essential to the management of their hypoglycemic potluck meal at 10 am hardworking staff operating room to receive.

Keywords: operating room staff, infection, injury from needle

1,3.Nurse, Hospital martyr
treasure
2.Nurse, Hospital 17 Shahrivar
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The hand hygiene by hospital staff of Imam Reza in Mashhad

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ABSTRACT

Introduction: Care infections are centers of challenges. In developed countries, 5- 10 % of patients admitted to hospital had been infected one or more. Investigation of nosocomial infection in hospital by doctor Alami, doctor Naderi, infection control supervisor and other members have been calculated at 12% .Hand hygiene is important in preventing nosocomial infections and the purpose of this study was to determine the rate of hand hygiene by staff of Imam Reza Hospital.

Materials and Methods: The 5 position of hand hygiene forms during 10 months in different parts of the hospital with the permission of the individual monitoring, control in course was completed and the amount of 20-minute hand hygiene compliance according to the procedures specified by the Ministry of health was calculated.

Result: A total of 2580 cases of hand hygiene on the standard form 31.22 % . Hand hygiene compliance rates in nurses in the evaluation were 42.72% and in students from a medical group was 17.32%. During the past year it costs 163.5 million for hand hygiene requirements and 4.3 billion for antibiotics.

Conclusion: The best and the most cost-effective method of preventing the occurrence of nosocomial infections is hand hygiene. Unfortunately hand hygiene before aseptic procedure had minimum observance. All of the barriers to increase hand hygiene compliance is the health belief, attitude to the effect of hand hygiene in the type of infection control, the lack of fit between the staff and the patient, etc.

Keywords: Nurse, hand hygiene, barrier, nosocomial infections

The incidence of infections in the surgical intensive care unit of the hospital and its influencing factors martyr in 1392 treasure Borazjan

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2,3. Nurse, Hospital martyr treasure

ABSTRACT

Introduction: Now in advanced countries the infection rate of admissions in developing countries is estimated to be around 25%. Although only 5% of hospital beds belong to the ICU and less than 10% of total patients treated in this section, but more than 25 to 33% of nosocomial infections is dedicated to the ICU. Nosocomial infection is an important factor to increase the duration of hospitalization, costs and mortality in hospitals. One of the highest incidence places of this complication is the intensive care unit. This study examines the factors affecting the incidence of infection in the intensive care unit of the hospital, Borazjan.

Materials and Methods: Status and duration of intubation, ventilator, urinary catheter and venous catheter, length of stay in the intensive care unit and the time of infection were recorded.

Results: Within one year of the study, 611 patients were admitted to the intensive care unit. Total of 854 patient days spent in this sector. During this period, 132 cases of infection reported in these patients, the risk of infection was 51/15 percent. Common nosocomial infection in the hospital with pneumonia terraced international norms of 3/50.

Conclusion: Hospital infection is a relatively common complication in patients who spent at least three days in the intensive care unit. The prevalence of similar or more studies that have been done in other parts of the world.

Keyword: Nosocomial infections, Special Section, Pnomonia

The knowledge of hand hygiene among the healthcare workers of two teaching hospitals of Mashhad

ABSTRACT

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Introduction: healthcare-associated infections affect millions of patients worldwide each year and can result in higher healthcare costs. Hand hygiene (HH) has been identified as the single most important factor preventing the cross-infection to decrease the rate of HAIs in healthcare facilities. The aim of this study was evaluating the knowledge regarding hand hygiene practices amongst the health care professionals and to identify areas of gaps in their knowledge.

Materials and Methods: a cross-sectional study was conducted in two university hospitals in Mashhad, Iran. A translated version of WHO Hand Hygiene Knowledge Questionnaire revised 2009 was administered to 161 respondents including 32 resident physicians and 92 nurses of 2 university hospitals in Mashhad in 2014-2015.

Result: 53.4% of the participants had claimed to have received formal training in HH in the last three years. About 68% of the participants had a moderate level of knowledge regarding HH. The score of 21% was $\leq 50\%$ (poor) and only 10.6% had a good knowledge score (i.e. the score $\geq 75\%$). There was no significant difference in the knowledge level of the HCWs who had received formal training in HH and those who did not. Also the mean knowledge score was not associated with the age, gender, employment duration, department or profession.

Conclusion: Our study highlights the importance of improving the current training programs targeting hand hygiene practices among healthcare workers.

Keywords: Hand hygiene, Healthcare associated infection, Healthcare workers, Knowledge

The preservation of oral dosage or ointments forms against fungal contamination in hospital is a necessity in health care (Investigation the incidence of mycotic contamination in tablets and ointments after opening the cover)

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ABSTRACT

Introduction: Pharmaceuticals products such as oral dosage or ointments are used in a variety of ways in the prevention, treatment, and diagnosis of diseases in hospital. The manufacturers have improved the quality of these products by sterilizing procedures. The incidence of mycotic contamination of pharmaceuticals products has been well documented, and contaminants range from true pathogens to opportunistic pathogens. Although it seems these medications in the path of the build and packaging are sterile, mis-handling or wrong method of use can cause them to become contaminated. Several reports have also been published describing clinical hazards that are attributable to microbiologically contaminated pharmaceuticals. So the preservation of pharmaceutical forms from contamination before and after opening the cover in hospital is a necessity in health care.

Materials and Methods: This study was conducted in 4 educational hospitals in Sari, Iran. The protocol for study of pharmaceutical contamination involved 3 ointments (Zinc oxide, Tetracycline and Betamethasone) and 4 tablets (Acetaminophen, Ranitidine, ASA and Vitamin C that were high intake for patients in hospitals after opening and usage. For comparison of fungal contamination ahead of the opening and after usage them, study establish for the same pharmaceutical medicines take from pharmacies on city. Fungi were identified using standard mycology procedures.

Results: Our results showed that among all samples of ointments after opening and usage became 94.4% to 100% contaminated for fungal elements. Also, samples of tablets after opening in delivery room and carried out in container by trolley became average 70.3% contaminated for fungal elements. *Aspergillus* species such as *A. Flavus*, *A. Fumigates* and *A. niger* were the most mold species isolated. *Rhodotorula* spp. was the most yeast species isolated. However 16.7% of Betamethasone ointment samples and 16.7% of all tablets had fungal contamination ahead of opening.

Conclusion: The results of this study are similar to previous reports that have revealed contamination of ointment and tablets used in hospital after opening the cover. Although the source of contamination was not investigated in this study, it seems that most of the contaminations arising during storage and mis-handling in pharmacies and wrong method of use after opening in hospitals. There is need for constant monitoring and control of pharmaceuticals on all steps from manufacture to use and modifying the methods of storage and carry out by nurses in hospitals for use of them by patients. Many fungi are not dangerous for healthy persons. However, some of these isolated fungi can be harmful to patients who have a weakened immune system.

Keywords: Pharmaceuticals, Ointment, tablet, fungal contamination, *Aspergillus*, *Rhodotrola*

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The rate of antibiotic utilization in Iranian children with acute respiratory tract illness: A nationwide community-based study

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ABSTRACT

Introduction: To investigate the prevalence of antibiotic usage in children aged less than five years with acute respiratory illness (ARTI) in Iran.

Materials and Methods: Data were collected from a national health survey conducted in 2010 (Iran's Multiple Indicator Demographic and Health Survey - IrMIDHS). Participants of this cross-sectional study were selected by multistage stratified cluster-random sampling from 31 provinces of Iran. Parents of children with less than five years of age responded to questions about the occurrence of any cough during the previous two weeks, referral to private/ governmental/other health care systems, and utilization of any oral/injection form of antibiotics. Data were analyzed using SPSS software¹⁸. Chi square test was used to determine antibiotic consumption in various gender and residency groups and also place of residence with referral health care system.

Results: Of the 9345 children under five years who participated in the study, 1506 cases (16.2%) had ARTI during two weeks prior to the interview, in whom 1143(75.9%) were referred to urban or rural health care centers(43.4 vs. 30.4%; $p < 0.001$). Antibiotics were utilized by 715 (62.6%) of affected children. Injection formulations were used for 150(13.1%) patients. The frequency of receiving antibiotics was higher in urban than in rural inhabitants (66.0% vs. 57.7%; $P < 0.05$).

Conclusion: The prevalence of total antibiotics usage in children less than five years with ARTI is alarmingly high in Iran. Therefore, interventions to reduce antibiotic use are urgently needed.

Keywords: anti-bacterial agents, utilization, respiratory tract diseases, child, Iran

The role of the education of personal hygiene and hygienic package in the prevention of flu-like illness in Mashhadi pilgrims to the Hajj in Saudi Arabia 2012

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ABSTRACT

Introduction: Every year more than 2 million pilgrims from different countries in the world including Iran participate in the annual Hajj in Saudi Arabia. Respiratory diseases have been the most common cause of illnesses among Iranian pilgrims. Transmission of infection by some causative organisms can be prevented by personal hygiene; The aim of the study was to investigate the effect of hygienic package usage in the prevention of flu-like illness in Mashhadi pilgrims.

Materials and Methods: In a prospective cross sectional study we put 4 caravans (dispatching groups of pilgrims) of Hajj pilgrims into the two groups; one receiving education of personal hygiene plus hygienic package including hand rub (gel or spray), surgical masks, soap, tissues and user instruction (intervention group) and the other without any intervention (control group). Flu like illness was defined as the presence of two of fever, cough and sore throat during their stay. Questionnaires including demographic and clinical information were distributed among trained physicians of caravans before departure from Iran.

Results: A total of 664 Iranian pilgrims of four caravans enrolled in our study. Of these 306 pilgrims in the intervention group and 358 in the control group Fifty-eight (19%) of pilgrims in intervention group and 75(20.9%) in control group received influenza vaccination (p value=0.503).

Flu like illness was detected in 159 (52%) of pilgrims in intervention group and 198(55.3%) in control group. P value was not significant between two groups. Flu-like illness was seen less in pilgrims using hand rubs in form of spray 64(41.8%) comparing pilgrims using hand rubs in form of gel 95(62.1%) and the control group 198(55.3%) (P value=0.0001)

Conclusion: Hygienic education along with delivering health package including surgical masks, tissues, and soap and hand rub especially in form of spray significantly prevents flu-like illness in pilgrims in relation to control group.

Keywords: flu-like illness, personal hygiene, Hajj

Urinary Infection self-care training in elderly

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ABSTRACT

Introduction: Urinary infection is very common in elderly populations. Because of difficulties in communication, elderly populations are prone to urinary infection. So the purpose of this study was to compare the referral of elderly after holding urinary infection self-care training.

Materials and Methods: It is a Randomized clinical trial carried out on 40 elderly females who referred to rural health center, which selected by available sampling and randomly divided in two groups.

Persons who used catheterization and had spinal cord injury omitted from study. In group 1 self-care training interventions in order to correct elderly life style to prevent urinary infection were consist of(regular exercise at least 1hour a week , daily use of water at least 2 liters, contraction of pelvic muscles 3 times a day, each time 2min with deep inspirations, no use of intractably antibiotic) carried monthly, ultimately after 5 months, compared with group 2 as a control, with no intervention, the referrals registered and analyzed with spss by mean score lower than 0.05 .

Results: The results indicated significant difference between two groups, in group 1 with mean age of 67.5 years 7persons (35%) and in group 2 with mean age of 68.2years 13 persons (65%) refer to rural health center with dysuria after intervention (P value<0.02) .

Conclusion: The results of this study showed the importance of providing self-care training program in urinary infection as a critical step in the prevention of elderly urinary infection.

Keywords: urinary infection, elderly, self-care training

Use & Abuse of antibiotics in URI of children

ABSTRACT

Esmaeel Sadeghi

Introduction More than half of all prescriptions for antimicrobial agents for children are given for 5 conditions: Otitis media, Sinusitis, Pharyngitis, cough illness/bronchitis, and non specific upper respiratory tract infection (the common cold). Antimicrobial agents often are prescribed, even though many of these illnesses are caused by viruses which are unresponsive to antimicrobial therapy. Children treated with antimicrobial agent for respiratory tract infections are at increased risk of becoming colonized by resistant respiratory tract flora, including strep. Pneumoniae and Haemophilus influenza. Children who subsequently develop respiratory tract infections are more likely to experience failure of antimicrobial therapy and are likely to spread resistant bacteria to closed contacts, both children and adult.

During one year period from September 2011-2012, the use of antibiotics for children with respiratory illnesses was evaluated. During this period, 3696 ill children was seen by the author, 1336 (36%) were febrile. Three hundred and eighty received antibiotics (10% of all and 28.4% of febrile children). Antibiotics were evaluated as appropriate in only 24 (6.3%) and inappropriate in 356 (93.6%). Inappropriate dose, short course of therapy, injection rather than P.O., frequently changing antibiotic, misuse of antibiotic in viral illnesses, Quich prescription of antibiotics instead of observing the patient and using aminoglycoside or 3rd generation Cephalosporins for nonspecific URI.

Among 24 cases received appropriate antibiotics were; penicillin in tonsillitis, Cephalexin in purulent. Rhinitis, cervical adenitis and sinusitis, Amoxicillin, CoAmoxiclave and Azithromycin in Otitis media.

In 259 (68%) of patients, one antibiotic, 94 (25.7%) 2 antibiotics and in 27 (7%), 3 or more antibiotics were used. Out of 526 antibiotics used, Cefixime was used in 29%. Azithromycin in 21%, CoAmoxiclav in 17.5%, and these 3 agents together in 67%, Amoxicillin was used in 11.5% of cases. In 380 patients given antibiotics, 452 illnesses were diagnosed with almost all of them respiratory & mainly upper respiratory illnesses. The diagnosed illnesses, were 116 in fall, 196 in winter- Cold season 314 (69.4%), 105 in spring, 33 in summer-warm season 138 (30.5%). Maximum uses of antibiotics were in December-January and minimum in June-July. Antimicrobial sensitivity pattern of bacteria in 2013 in Shiraz reveals; BABHS, BHS-not A & S.viridans and staph. aureus less than 10% and S.pneumonia 87.5%, H. influ 81% & Moraxella Catarrhalis 97.5% to be sensitive to Cefixime. Amoxicillin, an appropriate antibiotic to be used for streptococcal groups of organism, but inappropriate for S.aureus, H. influ and Moraxella. CoAmoxiclave is still appropriate for the mentioned organism, but High rate of diarrhea (at least for Iranian brand of this antibiotic) Cautious the use of this antibiotics. In 2013, about 50% of streptococci including strep. Pneumoniae are resistant to macrolid antibiotics, the same is true for S.viridans & S.pneumonia for Clindamycin. H. Infla is sensitive to Clindamycin in only 26.5% and no morraxella catarrhalis was found to be sensitive to Clindamycin. Clindamycin

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has good activity against staph. Coag. + and GABHS. Sensitivity of streptococci & Moraxella To cotrimoxazole is less than 10% & H. Infla 34%. Sensitivity of S.aureus to cotrimoxazole remains at the level of 80%. Whenever clinically indicated-mainly Purulency in URI (Otitis media sinusitis, purulent. Rhinitis & Bacterial Pharyngitis).

The prevalent organism should be determined locally for each community & use antibiotic accordingly