



Avoiding the unintended consequences of catheter-associated urinary tract infection

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Urinary tract infections (UTI) account for over 40% of all hospital acquired infections. Nearly 80% of UTI are associated with indwelling urinary catheters (CA-UTIs).

CA-UTIs occur at a rate of 3% to 10% per day of catheterization and the incidence approaches 100% within the 30 hospital days. Patients with CA-UTI spend an average of 3 additional days in the hospital. The increased length of stay for infected patients is the greatest contributor to cost. CA-UTI in critically ill patient can lead to bacteremia and even death and is one of the leading causes of mortality and morbidity among hospitalized patients. Patients with CA-UTIs often are asymptomatic and do not develop the “classic” signs and symptoms. Thus, obtaining a urine culture is warranted when a patient with an indwelling urinary catheter develops unexplained systemic symptoms.

Implementing surveillance is the key factor to the prevention of CA-UTIs. The CA-UTIs surveillance system enables healthcare workers to recognize the magnitude of the problem, what interventions are needed, and to assess what measures are effective in preventing CA-UTIs. Training and education of healthcare providers and increasing their awareness regarding basic infection control knowledge of optimal hand hygiene practices and methods of handling indwelling catheter and urine collecting system appropriately, securing catheter properly, and maintaining unobstructed urine flow and closed sterile drainage system using sterile technique properly are among some of the effective prevention strategies that must be implemented to reduce the risk of CA-UTIs.

Keywords: Urinary tract infections, catheter, Prevention



Probiotics versus placebo as prophylaxis in children after the initial episode of non-complicated febrile urinary tract infection

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ABSTRACT

Introduction: Growing antibiotic resistance and debates over their efficacy have for urinary tract warrants studying non-antibiotic prophylaxis for recurrent urinary tract infections (UTIs).

Materials and Methods: This was a randomized, double blind, placebo-controlled trial. Seventy-nine children after recovery from the first episode of febrile UTI assigned to receive 1 of 2 treatments: liquid probiotics (n=41; Lactobacillus acidophilus, Lactobacillus rhamnosus, Bifidobacterium bifidum, and Bifidobacterium lactis (10⁹ CFU/10 mL), given as 0.5 mL/kg two times a day (maximum daily dose 20 mL) or no treatment (placebo, n=38) for 12 months. Participants were visited in the clinic at monthly interval for routine physical examination. Routine urinalysis and urine cultures were obtained at baseline and at monthly clinic visit or earlier if indicated. Primary outcomes were the mean number of febrile UTIs, proportion of participants with at least one UTI during 12 months and time to first UTI.

Results: After 12 months of prophylaxis, the mean number of recurrent febrile UTIs was 1.1 (95% CI, 0.7-1.8) in the probiotic group and 1.9 (95% CI, 1.3-2.4) in the placebo group (p=0.02), (Table 2). The percentage of patients with at least one UTI at 12 months follow-up was 8% (3/38) in the probiotic group and 17% (7/41) in the placebo group (p=0.03). The median times to first UTI recurrence were 3 (2-7) and 4 (1-9) months in the probiotic and placebo groups, respectively (p=0.2). The child younger than 12 months had a higher incidence of recurrent infections than older children. The main causative microorganism of recurrent UTI was Escherichia coli (88%), which was not significantly different between the two groups. There were no specific adverse events among the participants during 12 months treatment.

Conclusion: Probiotics have beneficial effects in reducing the incidence of recurrent of UTIs in children when compared with placebo.



What is new regarding methicillin-resistant *Staphylococcus aureus*?

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MRSA strains have traditionally been classified as health care-associated MRSA (HA-MRSA) or community-associated MRSA (CA-MRSA) but more recently the term community-onset HA-MRSA has been used to describe the occurrence of MRSA infection in the setting of the presence of a healthcare exposure within the past year. Novel virulent MRSA strains arising in the community were first encountered in the late 1990s in the United States, Australia, and some European countries and have since risen explosively to become the predominant clone of *S. aureus* associated with community infections in many settings worldwide. Methicillin resistance among community isolates of *S. aureus* has been reported as high as 75% in some countries. Recently, livestock-associated MRSA (LA-MRSA) has been reported on a global basis and transmission of these strains from swine, cattle and horses has been implicated as a source of human infections, particularly in farmers, abattoir workers and veterinarians.

Specific genetic and molecular distinctions initially distinguished the HA- and CA-MRSA strains with the HA-MRSA strains found to be multiply drug-resistant and to harbor SCCmec types I, II, or III with varying multilocus sequence types (ST5, ST239, ST 247, ST250) whereas CA-MRSA strains have been found to have paucidrug-resistance and to harbor SCCmec types IV, V, and recently VI to XII and with different multilocus sequence types (ST1, ST8, ST80) and to carry multiple virulence factors. LA-MRSA strains often are non-typeable or harbor SCCmec V, have high rates of tetracycline resistance, carry multiple virulence factors and are most often multilocus sequence types ST398 or ST9. Over the last few years, healthcare-associated strains have moved into the community and community strains have spread rapidly within hospitals, and the original distinctions between CA-MRSA and HA-MRSA have become increasingly blurred.

With respect to new advances in treatment, the new advanced-generation cephalosporin ceftaroline (Teflaro) and the newer lipoglycopeptides such as dalbavancin (Dalvance), telavancin (Vibativ) and oritavancin (Orbactiv) are active versus MRSA and they retain susceptibility to fusidic acid, rifampin (Rifadin), the oxazolidinones linezolid (Zyvox) and tedizolid (Sivextro), and daptomycin (Cubicin). LA-MRSA strains are almost always resistant to tetracyclines, often resistant to quinolones, macrolides, clindamycin and variably resistant to aminoglycosides and trimethoprim-sulfamethoxazole. In addition LA-MRSA strains are sensitive to the newer agents listed above.

Controlling the spread of either HA-, CA- or LA-MRSA from an infected or colonized person to others in the hospital, family, or community is a key goal of prevention. In the hospital setting, hand hygiene, application of barrier precautions (gloves, gowns) private rooms, environmental and equipment cleaning, and antimicrobial stewardship are key preventive strategies. Active surveillance cultures to identify colonized patients and decolonization may be effective in selected settings but recent evidence suggests broad universally applied horizontal infection control approaches may be more effective. In the community setting, good personal hygiene, hand hygiene, ensuring all draining skin and soft tissue lesions have adequate dressings, not sharing potentially contaminated personal articles, and keeping a clean household environment are important. In sports settings, basic hygienic measures need to be followed including avoidance of sharing of towels and other personal items, showering after every practice or tournament, cleaning of communal showering and bathing areas, and cleaning or laundering of equipment after each use.

Keywords: Methicillin-resistant *Staphylococcus aureus*, treatment, drugs



Ring IPC, An intervention approach to Control Virus Transmission during Outbreak of Ebola: Experience from Liberia, 2015

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ABSTRACT

Introduction: The first outbreak of Ebola occurred in The Democratic Republic of Congo, in 1976. The recent Ebola outbreaks in West Africa, (first cases notified in March 2014), were the largest and most complex Ebola outbreaks since the Ebola virus was first discovered in 1976. There have been more cases and deaths (11031-until 14 February 2016) in these outbreaks than all others combined. From mid-January to Late-October 2015 all the confirmed EVD cases in Liberia were epidemiologically linked to the index patient. In involved clusters the index cases received care from at least one health care facility (HCF) prior to identification.

In this report, we will present how the “Ring IPC” approach provided intensive IPC support to healthcare facilities in areas of active Ebola transmission and helped break the chain of transmission by forming a strategically placed protective ring of IPC attention around persons with Ebola virus disease.

Materials and Methods: For this study, we employed a qualitative research model with an emergent design. Data collection occurred from December 2015 till February 2016. Raw data were captured from stakeholder’s field notes and then reviewed and processed.

Results: Overall, Ring IPC efforts appeared to be associated with an increase in the identification and isolation of suspected or probable Ebola patients. Only 0.14% (Two men) of the contact based exposed people, were not identified and became infected with Ebola. Also there was a very low prevalence of secondary infection (0.03%) was observed among health care workers

Conclusion: Low prevalence of secondary infection suggests that an appropriately targeted Ring IPC approach is an effective supplemental strategy to focus IPC support in response to clusters of disease. This approach may also be used to prioritize limited resources, including supplies and human resources such as appropriately trained personnel.



Is the User Seal Check a Replacement for Respirator Fit-Testing among Health Care Workers?

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ABSTRACT

Introduction: Many organizations recommend that health care workers wear N95 filtering face-piece respirators (N95-FFR) to reduce work-related exposure to bio-aerosols. Standards outline RFT (Respirator Fit-Testing) for the appropriate selection of an N95-FFR model. Some health officials have claimed that the RFT should be eradicated due its additional time and cost factors, and only a USC (User Seal Check) is enough to confirm that an acceptable face seal has been accomplished. This study observed whether a USC is an applicable substitute for RFT.

Materials and Methods: Subjects were given an N95-FFR and requested to complete a USC (as per company's advices) after which they instantly undertook a RFT. The sample population involved of 47 Health Care Workers (HCWs) who had never been before fit-tested, while the remaining 37 contributors were experienced respirator users.

Results: Only 2 of the 47 inexperienced subjects (6.8%) recognized an insufficient seal throughout their USC and the 45 remaining inexperienced subjects who indicated that they had satisfactory face seal prior to fit-testing failed the following qualitative fit-test. All 37 experienced users indicated that they had satisfactory seal after performing the USC; however, 22 (59.5%) failed the following qualitative fit-test.

Conclusion: These findings oppose the argument to exclude RFT and rely strictly on a USC to evaluate face seal.



Prevention of Surgical Site Infections (SSIs)

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The incidence of SSI globally varies from 0.9% of cumulative SSI rate in the USA (NHSN 2014), to 6.1% in Low Middle Income Countries (LMIC) (WHO, 1995-2015). SSIs are preventable and recent updated guidelines from WHO and CDC give guidance on this.

Although most SSIs are caused by the patient's endogenous flora, operating theatre (OT) staff may be a source of bacterial contamination. Bacteria are shed from the body and so, new scrub suits are used at each entry into the operating theatre suite. Thus far, no study has been done to confirm that the use of routine cap, mask or double gloving have any relationship with SSIs. Nevertheless, these personal protective equipment are routinely worn according to facility's policy.

The quality of air in the OT has often been cited as a major contributory factor to SSI. However, existing guidelines do not give supportive evidence of benefit for laminar airflow (LAF) compared with conventional turbulent ventilation of the operating room in reducing the risk of SSIs in total hip and knee arthroplasties, and abdominal surgery. Due to the high expense, it is therefore, not necessary to install LAF in new operating rooms.

Hospitals should evaluate their SSI, MRSA rates, and mupirocin resistant rate, if available, to determine whether implementation of a screening program is appropriate. Patients undergoing cardiothoracic and orthopaedic surgery with known nasal carriage of *S. aureus* should receive perioperative intranasal application of mupirocin 2% ointment with or without a combination of antiseptic body wash.

Asepsis is a critical practice factor. Surgical hand preparation is to be performed either by scrubbing with a suitable antiseptic soap and water or a suitable alcohol-based hand rub agent before donning sterile gown and gloves. Alcohol-based skin antiseptic preparations should be used on patients, unless contraindicated. Appropriate surgical prophylaxis should only be administered when indicated.

In general, the prevention of these infections is complex and requires the integration of a range of preventive measures before, during, and after surgery.

Keywords:

Surgical site infections, prevention, guideline



Oncological liver transplantation

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Liver transplantation is the most efficient treatment option for patients with end-stage liver disease. In the recent years, the type of referred patients has changed. The availability of direct acting antiviral (DAA) has led to a decreased number of patients with hepatitis C. In parallel, most unit see increasing number of patients with non-alcoholic liver fatty liver disease (NAFLD), which are challenging due to their related co-morbidities including obesity, diabetes, high blood pressure, dyslipidemia, including sleep apnea.

Beside patients for advanced cirrhosis, oncological patients now represent close to half of the indications for liver transplantation in most units. This observation is linked to the use of more efficient loco-regional cancer treatments allowing for downstaging patients with HCC to transplant criteria, and to the inclusion of patients with more advanced HCC. In addition, emerging indications are being discussed, including for patients with very early (single <2 cm) intra-hepatic cholangiocarcinoma, and selected patients with colo-rectal liver metastasis.

This rapidly changing pattern will be discussed, with a special emphasis on oncological liver transplantation indications

Keywords: Liver transplantation, cholangiocarcinoma, colo-rectal liver metastasis



Outbreak experiences: What are the most important steps to stop the outbreak?

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Approximately 2-10% of all nosocomial infections are acquired during nosocomial outbreaks. Nosocomial outbreaks are not specific to any one medical department and can occur overall in the hospital. They usually represent quite frightening events. Infection control personnel expend a great deal of effort in investigating such outbreaks, which may lead to unexpectedly high costs for the affected hospital. There is a risk of that the hospital will suffer from a loss reputation if the outbreak is reported to the community by the public media.

One crucial aspect is the early recognition of a possible outbreak. In order not to miss outbreaks, our IT colleagues developed a cluster and outbreaks alert system. Following the concept of machine learning, all microbiology reports and all patient movement data were put together in a data warehouse. By applying various algorithms, the system is able to detect substantial increases of pathogen detections above the endemic level in a specific ward and sends an alert to the infection control staff. They have to investigate if this increase is really associated with an outbreak (e.g. by further epidemiologic studies or use of typing methods to compare the strains).

Another important point is to get an idea of the source of the outbreak. Therefore, we created the outbreak database about 15 years ago (www.outbreak.database.com). It is the largest collection of nosocomial outbreaks currently available. Outbreaks published in the literature are filed systematically, enabling those on a specific parameter of interest to be retrieved quickly. The database is also very valuable for education medical staff.

Keywords:

Nosocomial infections, outbreak, infection control



Surgical hand preparation

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Surgical site infections (SSI) are a leading cause of health-care associated infections. Prevention of SSI is best accomplished by implementation of evidence-based measures. Among these measures, preparation of the hands of the surgical team has been recognised as an important step since the time of Semmelweis. The introduction of sterile gloves does not remove the need of surgical hand preparation, due to the high frequency of punctures, including unnoticed punctures. Therefore, correct surgical hand preparation aims to reduce contamination of the patient's open wound by the surgical team's skin bacteria if a glove is punctured. The World Health Organization (WHO) has recently issued guidelines to prevent SSI, and an important chapter concerns surgical hand preparation. Which technique is most effective in reducing SSI? Which product is most effective in reducing SSI? These are some of the questions that will be discussed.

Keywords:

Surgery, prevention, surgical hand preparation



Antimicrobial resistance

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Emerging resistance to antimicrobials has raised concerns about entering the “post-antibiotic” era. Indeed, the speed of emerging resistance appears to outpace the development of new antimicrobials. Abundant antimicrobial use both in husbandry and in medicine, predominantly in outpatient care, is one of the drivers of resistance. The other is hygiene, not only in healthcare, but also in the community. Together, this results in cross-transmission and selective pressure. There is substantial geographic variation in burden and type of multidrug-resistant microorganisms for which the reasons are not quite clear. Thus, the challenge of emerging resistance must be addressed by locally adapted antimicrobial stewardship: 1) restricted use of antimicrobials in husbandry and medicine (one health); 2) judicious use of broad-spectrum antimicrobials; and 3) hygiene (infrastructure, standard precaution measures, and isolation precaution measures).

Keywords:

Antimicrobials, resistance, antimicrobial stewardship



Hand Hygiene: from local to global, 1995-2018

Prof. Didier Pittet¹, MD, MS, CBE. Prof. Pittet Keynote

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The World Health Organization (WHO) Clean Care is Safer Care global programme was based around a change model built, tested and implemented at the University of Geneva Hospitals starting from 1995. It fostered partnerships and coordinated activities as set out in its programme plan. By 2017, more than 140 of the 194 United Nations' member states had pledged their support to implement actions to reduce HAI, corresponding to more than 95% coverage of the world population. The finalized WHO Guideline on Hand Hygiene in Healthcare was launched in 2009 alongside a tried and validated multimodal improvement strategy. The improvement strategy comprises five critical components: 1) system change; 2) healthcare workers' training and education; 3) evaluation and performance feedback; 4) reminders in the workplace; and 5) promotion of an institutional safety climate.

WHO has over this time coordinated more than 60 national campaigns and importantly launched the global annual healthcare worker call to action; the SAVE LIVES: Clean Your Hands campaign to maintain a profile on hand hygiene action at the point of care. By March 2018, more than 20 000 healthcare facilities worldwide had registered their commitment to action.

Among the many reasons for success are: system change making behavioral change possible; the fact that the promotional strategy is multimodal and evidence-, as well as experience-based; the use of a structured "top-to-bottom" as well as "bottom-up" implementation strategy; and the development of multiple tools for implementation.

Importantly, the promotion campaign is also linked to positive outcomes, and success and excellence are rewarded.

The promotion process also involves patients & relatives. In addition, we use and promote simplification, co-creation, creativity, community experience, silo busting, and the use of social media, and apply sharing economy principles.

Finally, leaving room for adaptation by users was among the most critical principles applied (see www.tinyurl.com/AdaptToAdopt). Adaptation to local resources, habits, culture and even religions is key. Respecting religious background and accounting for cultural diversity is key to success. Adapt to adopt and let individuals to be creative. Illustrative examples from the Clean Care is Safer Care experience will be given.

Keywords: Hand hygiene, global programme, campaign



Horizontal and vertical strategies to prevent MDRO

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In general, two approaches exist for infection control:

- Broad programs which attempt to reduce the rates of all infections due to all pathogens (horizontal programs)
- Narrow programs focusing on a single pathogen or single anatomic site (vertical programs)

In many countries, also in Germany, there is still a strong debate in the infection control area about which is the more beneficial approach. The most important example is the strong advocacy by some infection control experts for MRSA nasal screening and following contact precautions and targeted decolonization in the case of positivity (vertical program) versus a more broad-based horizontal program consisting of activities to increase hand hygiene compliance, improve antibiotic stewardship and cleaning/disinfection as well as general decolonization.

Recently, several hospitals stopped their vertical program to prevent MRSA and VRE and observed what happened. A meta-analysis published by Marra et al. combined the results of 14 cohort studies. Interestingly they found a trend toward reduction of MRSA infection after discontinuing contact precautions (pooled risk ratio, 0.84; 95% confidence interval, 0.70-1.02; $P = .07$) and a statistically significant reduction in VRE infection (pooled risk ratio, 0.82; 95% confidence interval, 0.72-0.94; $P = .005$). Therefore, they concluded that discontinuation of contact precautions for MRSA and VRE has not been associated with increased infection rates.

The presentation will discuss the latest study results concerning this point and present requirements which should be fulfilled when stopping the vertical approach for MRSA and VRE.

Keywords:

Multidrug resistant organisms, infection control, contact precautions



Infection Control - Past and Future

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Current health-care associated infections (HAIs) of major concern include those due to methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *Enterococcus*, *Clostridium difficile*, norovirus, and infections caused by antibiotic-resistant organisms (AROs). Most recently, the dramatic increase in the prevalence of infections caused by a specific ARO, namely carbapenemase-producing organisms (CPOs), especially when encountered in members of the family *Enterobacteriaceae*, is a major concern. Due to their ability to readily spread and colonize patients in health care environments, they represent one of the new emerging scourges of HAIs. Preventing the transmission of these CPOs requires a coordinated effort since there are few therapeutic options. In addition to the clinical concerns are the costs associated with HAIs. In the United States (US), there are over two million HAI annually¹ with the overall estimated annual direct costs to US hospitals ranging from \$35.7 to \$45 billion.^{2,3} There are numerous Infection Prevention and Control interventions that can be utilized in hospitals to prevent the spread of HAIs which include surveillance, outbreak investigations, measures to prevent spread of contagious organisms, education for healthcare employees, patients and family members, and reporting of HAI to national organizations

Keywords: Health-care associated infections,

Infection Prevention and Control, intervention



Infections after solid organ transplantation

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Solid organ transplant (SOT) recipients are at risk for infection, not only due to the surgery of transplantation, but also the immunosuppressive therapy required to prevent organ rejection. Time since transplantation alters the pattern of infection, which is divided into “early” post-transplant period (< 30 days) where patients are susceptible to healthcare-associated infections, the “intermediate” post-transplant period (30 days – 6 months) where patients are at risk of activation of latent infection, and the “late” post-transplant period where the predominant pathogens are community-acquired. Preventing infectious complications in SOT recipients can take the form of vaccination, universal prophylaxis, and preemptive therapy. These preventive measures are effective in reducing the incidence and severity of infections. An overview of these infections as well as prevention strategies will be discussed.

Keywords:

Solid organ transplant, infection



Past, current, and future challenges in infection prevention and control

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What's new in infection prevention and control (IPC)? Science and technology are well recognized and important drivers of change. Both acute and chronic care have improved due to the scientific discovery and new technologies designed to apply the discoveries in specific situations. The advancement of medical science has opened new practice areas for a diverse range of healthcare workers (HCWs) and continues to create opportunities at a never before experienced rate of change.

Although less than 50 years old as a specialty, IPC practice needs to adapt permanently to major healthcare changes. Some notable role transitions have occurred. For example, an expanded IPC practitioner role was probably the first, gradual reflection of the changes occurring at national and international levels. The demand for surveillance data and the rapid rise of public reporting is an important response to significant national trends. Technology to support a more sophisticated and complex approach to surveillance has followed the expanding data demand. The volume of tasks to be performed and associated institutional expectations have increased over time, but in its most basic aspects the IPC role remains essentially unchanged in terms of core functions: surveillance and reporting, regulatory and accreditation compliance, orientation and staff education, immunization programs, and periodic rounding. Above all, one of the major roles of the modern IPC is to be a change agent, promoting HCWs behavioral change.

The lecture will be the occasion to review past, current and future challenges as well as to review some recent innovations in IPC to be considered in regards to the leading healthcare-associated infection types. A special emphasis would be to review lessons learned from the past, including work by pioneers in IPC, and to highlight common elements associated with the successful implementation of intervention strategies. Visions for the future of IPC will be presented

Keywords: Infection prevention and control, challenge, innovation



Catheter-related infections

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Vascular catheters are the most commonly used medical device in healthcare. At any day, 50% and 10% of inpatients either have a peripheral venous catheter (PVC) or a central venous catheter (CVC) in place, respectively. Interventions with the aim to standardise and improve practice in catheter insertion and care reduce catheter-related bloodstream infections (CRBSI) in the order of 50-60%, at least in central lines. A recent randomized-controlled trial in Europe unequivocally confirmed the association of best practice with CRBSI reduction, but also shed light into the rather complex implementation of best practice interventions in different socio-economic contexts.

Keywords:

Vascular catheters, bloodstream infections, prevention



Robotic Surgery in Urology

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When the laparoscopic evolution started in the 90's, it became quite quickly obvious that some complex open operations would be hard to perform minimally invasively, most often because of the difficulty to suture laparoscopically, and/or to reach a remote operative site.

In urology, the best example of this situation is radical prostatectomy. Laparoscopically, there were many caveats related to the prostate located retroperitoneally, and the last stage of the operation, ending with a difficult suturing session when it came to anastomose the bladder to the urethra .

The da Vinci robot, a telemanipulation system, was conceived in the late 90's to allow surgeons to operate distant patients ; hence civil surgeons far away from the battlefield would be available to offer their skills close to those injured at the warfront. It included an operative console where the operator received 3-d vision of the operative field, thanks to the double camera system (one for each eye), and instruments with 7 degrees of freedom movements manipulated by joysticks.

The system was first oriented towards coronary bypass surgery just before the turn of the millennium, but cardiac surgeons had difficulty to take advantage of this new technology. In 2001, Binder performed the first radical robotic prostatectomy in Frankfurt (Germany). This was initially looked at with significant scepticism, but soon the urologic team at the Ford Hospital in Detroit (USA), in collaboration with a Paris team (France) followed on by standardizing operative steps, which helped to disseminate the technique.

Since then, robotic prostatectomy has crept up the ladder, being performed now in over 90 % of cases in the US, and 75 % in Western Europe. The da Vinci system has allowed to promote a significantly less invasive operation than that performed open, with distinctly more easiness to work in a minimally invasive fashion than with pure laparoscopy. At this time, the oncologic and functional (continence and potency recovery) results obtained with the robot are at least as good as those of open surgery, with a shorter hospital stay, no more blood transfusions and less major complications . Criticized by many to be a marketing tool of wealthy private clinics, the da Vinci robot has nevertheless expanded its urologic indications to partial nephrectomy for cancer, ureteral reimplantation, ureteral reconstruction so as radical cystectomy and urinary diversion. Each of these minimally invasive opportunities will be analyzed, so as their reasonable integration and utility in public health systems.

Keywords: Surgery, robotic, urology



Surveillance of healthcare-associated infections (HAIs)

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Surveillance and feedback of infection rates to clinicians and other stakeholders is a cornerstone of the Infection Prevention and Control (IPC) program in the healthcare setting. In addition, HAIs are increasingly included in public reporting and in some countries, payment mandates. Current manual surveillance methods are resource intensive and may lack standardization in both definition and methodology. Automated surveillance methods have been recommended as a solution for the limitations of manual surveillance methods. However, questions have been raised with regards to the accuracy of using the computer as the source data in surveillance.

Where surveillance data are used for public reporting, it is recommended that surveillance methods provide high-volume data with an acceptable degree of reliability and objectivity. This is where automation of surveillance may provide a solution for this challenge given its features of reproducibility, objectivity, and scalability.

Risk adjustment is an essential factor of consideration especially where the objective is comparison of performance between institutions. Within the organization, where the main objective is quality improvement, the surveillance method chosen should detect clinically relevant, preventable outcomes that can be compared over time. Most commonly, the run or control charts are used to display the performance over time for quick and easy evaluation of the significance of the variation in data reported.

The large amount of data in hospital management systems can help to detect adverse events, highlight risk factors, and evaluate the effectiveness of preventive actions. Algorithms may be written to help one detect early signs of outbreak. As IPC aims to change human behavior in an effort to prevent infections, more and more facilities are taking innovative approach in using big data analytics. The use of real time data is an added advantage to help generate reports about visits to hand hygiene stations and missed opportunities by staff during hand hygiene monitoring; as it allows for possible prompt modification in behavior.

Keywords:

Healthcare-associated infections, Surveillance, Data



Generation of *Pseudomonas aeruginosa* aerosols during handwashing from contaminated sink drains, transmission to hands of hospital personnel, and its prevention by use of a new heating device

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Pseudomonas aeruginosa
handwashing
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ABSTRACT

Introduction: *Pseudomonas aeruginosa* is an important pathogen and produce widespread infections. Increasing of antibiotic usage for *P.aeruginosa* infections, created antibiotic resistance and subsequently to produce new antibiotics.

Materials and Methods: *Pseudomonas aeruginosa* was isolated from sinks of washing basins, showers, toilets and bathtubs, from the personnel and patients of a mixed infectious disease ward in the 2 Tehran hospitals during a prospective 8-week epidemiological study.

Results: The 86% of all sinks were contaminated with *P. aeruginosa* strains. Upon entering the hospital, all personnel hand cultures were *P. aeruginosa*-negative. However, during duty, 38% of the personnel members carried different *P. aeruginosa* strains on their hands.

Conclusion: Detection of *P. aeruginosa* strains in sinks preceding the isolation of identical genotypes from personnel hands suggested a transmission route from sinks to hands. Opening of water taps generated aerosols containing *P. aeruginosa* sink organisms which contaminated hands during hand washing. Survival times of various *P. aeruginosa* strains in aerosols was dependent on strain characteristics, light and humidity, and $t_{1/2}$ differed between 3-76 min. Heating of washing basin sinks to 70 degrees C with a new, safe and inexpensive device inhibited bacterial growth in sinks, generation of *P. aeruginosa* aerosols, and resulted in hand cultures negative for *P. aeruginosa* after washing.



Evaluation of persistent antimicrobial effect of chlorhexidine-based shampoo on human skin to be used for patients before surgeries

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Chlorhexidine
Surgery
Antimicrobial agents

ABSTRACT

Introduction: SeptiScrub (Shampoo) is a disinfectant based on 4% chlorhexidine, designed to disinfect the skin of patients before surgery. Chlorhexidine has good persistent effect as it binds to proteins in Stratum Corneum skin layer and persists to exert antimicrobial activity against bacterial growth. The purpose of this study was to evaluate the persistence of SeptiScrub antibacterial effect over the time.

Materials and Methods: The forearm skin of 5 volunteers was selected as the test site. After disinfection of the site with SeptiScrub, the forearm was divided into seven distinct parts and covered with a sterile gas. At 7 different times (30 sec, 30 min, 4 hours, 6h, 8h, 12h, 24h), 106 live *Staphylococcus aureus* were applied into one of these locations. After 5 minutes, the site of inoculation was washed with 5 ml BHI broth medium to allow all bacteria (living and dead) to transfer to the BHI medium. In order to determine the number of live bacteria, 1:100 volume of BHI broth was immediately cultured on the BHI agar medium.

Results: Antibacterial effect was completely persisted in the sites that were screened in 30 sec, 30 min, 4 h, 6h, 8h, and 12h, therefore no growth of bacteria was seen. In the site which was evaluated in 24h, some growth of bacteria was observed.

Conclusion: The results of our study showed that the SeptiScrub shampoo antibacterial effect can completely persist in appropriate conditions for at least 12 hours and it acts perfect to be used before surgeries .



Identification of yeast species isolated from bronchoalveolar lavage specimens of high-risk individuals using MALDI-TOF MS

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ARTICLE INFO	ABSTRACT
<p>Keywords: high-risk patients Candida MALDI-TOF Mashhad</p>	<p>Introduction: <i>Candida</i> species are considered as opportunistic pathogen and the most commonly isolated from clinical respiratory specimens. Although their significance in the pathogenesis of disease remains unknown in most cases, however, among immunocompromised high-risk patients can play an important role. The aim of this cross-sectional study was to identify of the yeast isolated from bronchoalveolar lavage (BAL) specimens of immunodeficiencies individuals.</p> <p>Materials and Methods: One hundred fifty BAL specimens were obtained from patients suspected to fungal infections. The specimens were examined by direct examination and cultured on Sabouraud dextrose agar. The plates were incubated for 2–3 days at 35 °C and the <i>Candida</i> colonies were purified using CHROMagar Candida. The isolates were identified by matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) system.</p> <p>Results: Of the 150 BAL specimens, 45 (30%) had positive cultures for yeast species with a high colony count. Fourteen (9.3%) of the specimens had more than two yeast species. The frequencies of the yeast species were as follows: <i>C. albicans</i> (n=32, 53.3%), <i>C. glabrata</i> (n=8, 13.3%), <i>C. tropicalis</i> (n=8, 13.3%), <i>Magnusiomyces capitatus</i> (n=4, 6.7%), <i>C. krusei</i> (Issatchenkia orientalis) (n=4, 6.7%), <i>C. parapsilosis</i> (n=2, 3.3%), <i>C. africana</i> (n=1, 1.7%) and <i>Kluyveromyces marxianus</i> (n=1, 1.7%).</p> <p>Conclusion: <i>C. albicans</i> was the most common <i>Candida</i> species isolated from BAL specimen of the high-risk patients. However, the frequency of <i>non-albicans Candida</i> species was significant. Therefore, it should be considered as one important issue among these patients.</p>



Comparative Mutant Prevention Concentration (MPC) Values of Meropenem, Gentamicin, Tigecycline and Ciprofloxacin Tested Against Clinical Isolates of *E. Coli* (Ec), *Serratia spp.* (Sp), *Acinetobacter spp.* (As), *Pseudomonas aeruginosa* (Pa) and *Klebsiella spp* (Ks)

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ARTICLE INFO	ABSTRACT
<p>Keywords: MPC Meropenem Gram-negative bacilli</p>	<p>Introduction: Multidrug resistant Gram-negative bacilli are therapeutically problematic with limited options. Meropenem (MP), gentamicin (GM), ciprofloxacin (CP) and tigecycline (TIG) often remain active against some multidrug resistant pathogens. MPC defines the antimicrobial drug concentration blocking growth of the least susceptible cells present in high density bacterial populations. We determined MPC values for MP, GM, TIG and CP against Gram-negative bacilli.</p> <p>Materials and Methods: Minimum inhibitory concentration (MIC) was determined using 10^5 cfu/ml in Mueller-Hinton broth tested against doubling drug concentrations with incubation for 18-24 hours in O₂ at 35-37°C. For MPC testing, $\geq 10^9$ CFU were applied to drug containing agar plates containing 2-fold drug concentration increments. Incubation was as described, and plates were read at 24/48 hours. The lowest drug concentration blocking growth was the MIC or MPC depending on method.</p> <p>Results: 48 clinical isolates were tested: 10 Ec, 8 Sp, 10 As, 10 Pa, 10 Ks. All strains were susceptible to each drug by MIC. CP (not TIG) was tested against Pa. For MP, GM and TIG tested against Ec, Sp, As and Ks the MIC range values ($\mu\text{g/ml}$) respectively were: 0.008-0.016, 0.25-1, 0.031-0.5; 0.031-0.063, 0.5-4, 0.25-1; 0.063-0.5, 0.063-0.5, 0.031-0.25; 0.004-0.016, 0.063-0.5, 0.125-0.5. For MP, GM and CP tested against Pa, MIC values ($\mu\text{g/ml}$) respectively were: 0.031-1, 0.125-0.5, 0.031-1. For MP, GM and TIG tested against Ec, Sp, As and Ks the MPC range values ($\mu\text{g/ml}$) respectively were as follows: 0.125-\geq0.25, 4-\geq16, 1-16; 1-\geq2, 8-16, 8-\geq32; 1-\geq8 (1 strain), 2-8, 1-\geq4; 0.125-\geq4 (1 strain), 4-16, 4-\geq32. For MP, GM and CP tested against Pa, MPC range values ($\mu\text{g/ml}$) respectively were: 4-\geq32, 16-\geq32, 2-\geq32 (1 strain).</p> <p>Conclusion: Mp MPC values were lowest of the drugs tested and for most strains clinically achievable. GM MPC values were elevated 16-32 fold against most of the strains. For TIG, Sp and Ks, MPC values were 16-32 fold higher than MIC values. Our data suggests MP still has clinical utility against Gram-negative bacilli resistant to other drugs and drug classes.</p>



Vaccination

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Smallpox was declared eradicated from the world in 1977. Polio is close to worldwide eradication. Measles & Rubella are no longer endemic in the U.S. as of 2006 : Infants & Children and Adolescents are routinely vaccinated against 16 diseases in the U.S.: DPT, Polio, Hib ,HAV , HBV , MMR , Rotavirus , Varicella ,Pneumococcal , Meningococcal , Influenza , HPV in girls 11-12 yr.

Immunization during pregnancy poses theoretic risks to the developing fetus .Pregnant women should receive a vaccine only: when the vaccine is unlikely to cause harm, the risk for diseases exposure is high, the infection would pose a significant risk to the mother or fetus.

When the vaccine to be given during pregnancy: Delaying administration until to second or third trimester, when possible to minimize teratogenicity.

Vaccines recommended for routine administration during pregnancy are adult type Tetanus & Diphtheria (Td), acellular pertussis (Tdap) and inactivated Influenza vaccines .In developing countries with a high incidence of neonatal tetanus: Td is routinely administered during pregnancy without evidence of adverse effects and occurrence of neonatal tetanus.

Inactivated influenza vaccine should be administered to all women who will be pregnant during the influenza season. Live-virus vaccines should be avoided during pregnancy. Inactivated poliovirus (IPV) vaccine can be given to pregnant women who never have received poliovirus vaccine. Rabies vaccine should be given to pregnant women after exposure to rabies. Because MMR & Varicella vaccines are contraindicated for pregnant women, efforts should be made to immunize susceptible women against these illnesses before or after pregnancy

Keywords: Immunization, children, pregnancy



Community-Acquired Pneumonia, Management, Evidences and Prospect for Antibiotic Stewardship programs

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Community-Acquired Pneumonia (CAP) is the leading cause of mortality and morbidity in children and adults CAP. Moreover, it is reported as the most common cause of inappropriate antibiotic prescription in European countries. The annual cost of pneumonia calculated as to be at \$4.4 billion. The Burden data are retrieved from some national databases and prospective studies. Nevertheless, the precise extent of the problem is hard to determine as the most of our knowledge about CAP comes from severe/hospitalized cases that may reflect a minority of the patients.

The severity of the disease at presentation, age and Chest x-ray are the most important factors for designing an evidence-based approach for management of the CAP. Diagnostic approach to CAP include radiologic evaluation of the chest and microbiological investigation. The choice and extent of investigation also mostly depends on severity of the disease. The approach to CAP in children is different as the morbidity and mortality rate in this age group is much higher surpassing the numbers for elderly people in developing countries.

The choice of antibiotics in adults in non-ICU cases, limited evidence supports the use of either combination therapy with a beta-lactam plus a macrolide or plus ciprofloxacin or monotherapy with moxifloxacin or levofloxacin for empirical treatment. In children, the first choice is between amoxicillin as the 1st line therapy and then macrolides depending on the age, immunity of the child, severity of the disease, and the bacteria isolated from sputum or tracheal aspirates cultures if available.

There are some controversies for the management of CAP in various populations. These are mostly affected by the available diagnostic and treatment facilities, vaccination coverage, the prevalence of antibiotic resistance, and availability of local hospital, intermediate and national guidelines. Many data indicate that the Antibiotic Stewardship programs should be the main basis of approach to CAP. The objectives of this review/panel are to discuss current approaches, controversies, and antibiotic stewardship prospects in the management of CAP in the face of a time period approaching Post-Antibiotic Era.

Keywords: Community-Acquired Pneumonia, management, Antibiotic Stewardship programs



Antibiotic Susceptibility Pattern of Patients with Urinary Tract Infection in Yasuj City in 2016

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ARTICLE INFO

Keywords:

Urine culture
UTI
suprapubic
antibiotic

ABSTRACT

Introduction: Urinary tract infection is one of the most common and important infection in childhood age group that promptly diagnosis and treatment has very important role in prevention of urinary tract complications, renal damage and also antibiotic resistance in pathogenic bacteria. This study was done for determination of antibiotic susceptibility pattern in urinary tract infection in our country.

Materials and Methods: This study was done on 145 urine specimens of patients who were referred to Emam Sajjad hospital of Yasuj city with urinary tract infection symptoms in 2016. All urine samples were taken by suprapubic aspiration.

Results: These results showed *E.coli* (77%), *Proteous* (15%), *Kelebsiella* (5%), *Yersinia* (3%). Antibiotic susceptibility was sensitive to ceftriaxone (75%), imipenem (69%), gentamicin (57%) and resistance to amikacin (73%), ampicillin (70%), cephalotin (73%) and cefixime (45%)

Conclusion: This study showed that we need for annual research for diagnosis of antibiotic susceptibility pattern for resistant microorganisms in our country.



Reoccurrence of an acquired post infectious heart disease in north- east of Iran

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ARTICLE INFO

Keywords:

Acute rheumatic fever
Carditis
Echocardiography
Children

ABSTRACT

Introduction: Rheumatic fever (RF) is a known complication of type A streptococcus infection mediated by immune system responses. RF is an acquired but preventable heart disease and a major differential diagnosis in many clinical and also paraclinical settings also. RF can leads to important cardiac and neurologic complications. Nowadays Jones criteria are used to diagnose of RF. Although incidence and prevalence of RF decreased in the world but not eradicated in many countries and the aim of our study was determination of reoccurrence of this old disease in northeast of Iran.

Materials and Methods: A cross sectional study on children (less than 18 years old age) with RF diagnosed by using the Jones Criteria at department of pediatrics of Imam Reza hospital and Ghaem hospital (Two important and tertiary referral hospitals) of Mashhad University of medical sciences between September 2006-2016. Data collected and analyzed statistically by SPSS (16) software.

Results: From 180 cases 89 patients (49.4%) were male. The mean age was 10.4+3.37 years old (Range 3-18 Y). Arthritis and arthralgia was most common referring chief complaint. Carditis is found in 123 patients, arthritis in 96, subcutaneous nodule in 2, erythema marginatum in 28 and chorea in 13 patients. The most common minor criteria were fever and arthralgia in 105, high ESR in 87 and prolong PR is found in only 8 patients. RF frequency increased during 2011 to 2015. The most common echocardiographic findings in order were MR, AI an MR& AI. Frequency of carditis increased significantly with older age and reported murmur in less than one thirds of cases. Only two cases need valve replacement.

Conclusion: RF is an important but preventable heart disease in childhood. It is not eradicated and even increased reoccurrence in recent years. Carditis was the most common serious complication that often was subclinical and underdiagnosed especially in older ages. Echocardiography is a sensitive and noninvasive diagnostic tool and Clinical suspicious in endemic area needed for early diagnosis and treatment.



Hazards and health problems associated with air pollution

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Exposure to environmental pollutants is a global health problem and associated with the development of many chronic diseases, including cardiovascular disease, diabetes, metabolic syndrome.

Indoor and outdoor air pollution is linked to 1 in 10 deaths in children under 5 years of age.

Most important outdoor air pollutants are particulate matter (PM), O₃, SO₂, NO₂, CO, Lead (Pb).

Breathing air with a high concentration of fine particles specifically particulate matter (PM) smaller than 2.5 µm (PM_{2.5}) is associated with hypertension, coronary heart disease, stroke, and type 2 diabetes.

Exposure to air pollutants is associated with low or reduced birth weight, small size for gestational age (SGA), and preterm birth. 13 studies found an association between exposure to air pollution and a heightened risk of stillbirth.

Major source of PM_{2.5} throughout the world today is the human combustion of fossil fuels from a variety of activities (eg, industry, traffic, and power generation).

Developing fetus and young child, and especially the poor, are most vulnerable to the impacts of both toxic air pollutants and climate change.

Fossil fuel combustion (coal, diesel fuel, gasoline, oil, and natural gas) for electricity production, heating, Transportation and industry are the main source of air pollution.

Developmental problems such as childhood attention deficit/hyperactivity disorder have been associated with early-life exposure to air pollution.

Air pollution was recently ranked seventh within the leading risk factors for mortality.

Early life and school-age exposure to air pollution has a negative impact on lung function, at least up to adolescence.

Keywords: pollutants,air,heralth



AdeABC Efflux Pump Associated with Multidrug Resistance in *Acinetobacter baumannii* Isolates in the ICU of Rasoul Akram Hospital of Tehran in Iran

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ARTICLE INFO

Keywords:

Acinetobacter baumannii
Resistance
AdeABC Efflux Pump

ABSTRACT

Introduction: The aim of this study was to determine frequency of different types of genes encoding Abe M, Ade ABC pump in Clinical strains of *A. baumannii* isolated in Rasoul Akram Hospital and the role of these genes in antibiotic resistance in this organism.

Materials and Methods: In total, 64 samples were collected during 2014-2015. PCR was used to confirm isolates which were *Acinetobacter spp* Antibiotic susceptibility was performed using diffusion disk method on Müller Hinton in accordance with the CLSI guidelines. Minimum inhibitory concentration of Imipenem was determined by using E-test. Extracting DNA and determining the genes of Abe M, Ade ABC were performed.

Results: *Acinetobacter spp* was resistant to Meropenem in 60.9% and about 56.3% to Imipenem The results of minimum inhibitory concentration of *A. baumannii* isolates against Imipenem in the absence of efflux pump inhibitor showed that 36 isolates were resistant to Imipenem (56.3%) so that in 30 isolates the amount of MIC for Imipenem was higher than 128 µg / ml, in four strains 32 µg / ml and in two strains 64 µg / ml. Some *A. baumannii* strains had 81.25% resistance to multiple drugs. The highest gene prevalence was related to AdeA gene (96.9%) follow by AdeB (85.9%) and AdeC (60.9%) AdeM (84.8%) in present study.

Conclusion: The role of efflux pump inhibitor in Carbapenem resistance is important. It is also better to identify these bacteria in each hospital, using molecular methods, and determine antibiotic resistance characteristic and appropriate antibiotics to be prescribed accordingly.



Evaluation of hand hygiene among surgeons in Akbar pediatric children's hospital (Iran)

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ARTICLE INFO

Keywords:
Hand rubbing
operation room
hand hygiene

ABSTRACT

Introduction: Preventing infections in perioperative setting is critically important specially in neonates and pediatric age group who are more prone to infectious complications and sepsis. Since 1847 that the importance of hand rubbing and usage of sterile gloves were explained, several methods and disinfectant materials are introduced and tried.

We use alcohol base hand sanitizers in our operating room(OR) in Akbar Children's hospital (Mashhad- Iran).

In this study we will assess the effectiveness and differences between hand rubbing methods that are currently used in our OR and also comparing the results during multiple operations of a single surgeon.

Materials and Methods: We collected the fingerprint of the thumb of the dominant hand of surgeons who were all blind to the study protocol after hand rubbing and just before using the surgical gloves in a sterile culture plate.

Also the specimens were taken during a long operation day for every surgeon during multiple operations. Type of operation were also considered as clean or infected procedures.

Plates were incubated aerobically at 37-degree C for 48 hours while colonies were counted at 24 and 48 hours.

Data were analyzed considering the hand rubbing time less than 1 min or more, during multiple operations and also after an infected procedure, looking for any significant difference in colony count reduction.

Results: Data didn't show significant difference in colony count regarding the time of hand rubbing while the colony count were decreased significantly during a long day in OR and after multiple scrubbing.

Conclusion: repeated hand rubbings will improve hand hygiene more effectively rather than using specific types of hand rubs or scrubbing style or duration.



Infection rate of extracted implantable ports in hematology oncology pediatric patients

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ARTICLE INFO

Keywords:

Port
Infection
Culture
Oncology
pediatric

ABSTRACT

Introduction: Implantable ports (Polysite) are routinely used as a long term central venous access for pediatrics in hematology- oncology ward who needs multiple chemotherapy treatments. These children are highly predisposed to infections due to immune compromised status and poor general condition. Fever with unknown origin is not rare among these patients and the implanted port is a usual suspect in all cases. We had to extract the ports in such patients with FUO while the ports are critically useful among these cases that obtaining a venous access is very difficult for them. More ever, implanting and extraction of ports are done in operation room and under general anesthesia with their own risks and psychological and physical side effects. In this study we evaluated the infection rate and type among extracted ports in hematology – oncology patients.

Materials and Methods: All cases who operated to extract the implantable port for any reason were included in our study. The study was conducted in Dr Sheikh Children's hospital. We opened the port reservoir after port extraction and used the inner materials (blood clots mostly) to obtain a culture. We also assessed the simultaneous blood culture that was mostly done as the routine protocol of sepsis work up. Plates were incubated aerobically at 37-degree C for 48 hours while colonies were counted at 24 and 48 hours. We evaluated the infection rate of extracted ports and accordance of the results of port and blood culture.

Results: Rate of implantable port reservoir among patients was 45% . 23% in elective asymptomatic cases and 67% in febrile or septic patients. Blood- port culture accordance rate was 63% .

Conclusion: Although the port culture may be positive among most febrile patients , but It is not the source of infection necessarily .



Strategies to prevention of Crimean-Congo hemorrhagic fever hospital transmission

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Crimean-Congo hemorrhagic fever (CCHF) is one of the most widely distributed viral hemorrhagic fevers in Africa, Middle East, Asia and in many parts of Eastern Europe. Although ticks are major vectors in transmission of the virus, human to human transmission via percutaneous or per mucosal exposure to infected blood and body fluids can occur. Person-to-person transmission is also reported through a form of hospital acquired infection. Standard universal precautions are necessary to prevent of transmission in hospital. People entering to the patient's room should wear gloves and gowns, and those who have close contacts should be facial masks or surgical masks and eye protection to prevent contact with blood or other body fluids. Studies on vaccines against CCHF virus are limited and the vaccine is not available in many countries because of its method of preparation. Post exposure prophylaxis with ribavirin should be considered potentially for people exposed to CCHF virus; known high-risk individuals such as those who have mucous membrane contact or percutaneous injury in contact with the infectious body secretions, or blood of patients with CCHF. Also they should be placed under medical surveillance, if fever develops; treatment with ribavirin should be initiated promptly as presumptive treatment of CCHF. As well as special measures should be applied by anyone involved in management of burial of suspected or confirmed viral hemorrhagic fever patients.

Keywords: Crimean-Congo hemorrhagic fever, patients, prevention



Worldwide burden of health care-associated infection

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'Healthcare associated infections' (HCAI) or 'nosocomial' infections are infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting. Additionally, they comprise occupational infections among the medical staff. Frequently prevalent infections include central line-associated bloodstream infections, catheter-associated urinary tract infections, surgical site infections and ventilator-associated pneumonia. Nosocomial pathogens include bacteria, viruses and fungal parasites. HCAI represents the most frequent adverse event during care delivery. True global burden of HCAI remains unknown because of the difficulty in gathering reliable data. It can be estimated that each year, hundreds of millions of patients around the world are affected by HCAI. The burden of HCAI is several folds higher in developing countries than in developed ones. The impact of HCAI implies prolonged hospital stay, long-term disability, increased resistance of microorganisms to antimicrobials, a massive additional financial burden for health systems, high costs for patients and their families, and excess deaths. In Europe, HCAIs cause 16 million extra-days of hospital stay, 37 000 attributable deaths, and contribute to an additional 110 000 every year. Annual financial losses are estimated at approximately €7 billion, including direct costs only. In the USA, approximately 99 000 deaths were attributed to HCAI in 2002 and the annual economic impact was estimated at approximately US\$ 6.5 billion in 2004.

Information is very scanty from low- and middle-income countries.

Data from systematic reviews of the literature on endemic HCAI from 1995 to 2010 in high- and low/middle-income countries showed that pooled HCAI prevalence in mixed patient populations was 7.6% in high-income countries. The European Centre for Disease Prevention and Control (ECDC) estimated that 4 131 000 patients are affected by approximately 4 544 100 episodes of HCAI every year in Europe. The estimated HCAI incidence rate in the USA was 4.5% in 2002, corresponding to 9.3 infections per 1000 patient-days and 1.7 million affected patients.

Hospital-wide prevalence of HCAI varied from 5.7% to 19.1% with a pooled prevalence of 10.1%. Of note, the pooled HCAI prevalence was significantly higher in high- than in low-quality studies (15.5% vs 8.5%, respectively). Surgical site infection (SSI) is the most surveyed and most frequent type of infection in low- and middle income countries with incidence rates ranging from 1.2 to 23.6 per 100 surgical procedures and a pooled incidence of 11.8%. By contrast, SSI rates vary between 1.2% and 5.2% in developed countries.

The risk of acquiring HCAI is significantly higher in intensive care units (ICUs), with approximately 30% of patients affected by at least one episode of HCAI with substantial associated morbidity and mortality. Pooled cumulative incidence density was 17.0 episodes per 1000 patient-days in adult high-risk patients in industrialized countries. Among adult ICU patients in high-income countries, pooled cumulative incidence densities of catheter-related BSI (CR-BSI), urinary catheter-related UTI (CR-UTI), and ventilator-associated pneumonia (VAP) were 3.5 per 1000 CL-days, 4.1 per 1000 urinary catheter-days, and 7.9 per 1000 ventilator-days, respectively. In low and middle-income countries, pooled cumulative incidence densities of CR-BSI, CR-UTI, and VAP were 12.2 per 1000 CL-days, 8.8 per 1000 urinary catheter-days, and 23.9 per 1000 ventilator days, respectively. Neonatal infection rates in developing countries are 3 to 20 times higher than in industrialized countries.

According to Extended Prevalence of Infection in Intensive Care (EPIC II) study, the proportions of infected patients within the ICU are often as high as 51%. Based on extensive studies in USA and Europe shows that HCAI incidence density ranged from 13.0 to 20.3 episodes per thousand patient days.

The frequency of HCAI in Iran during one year (1395 Shamsi 2015-2016) in 555 hospitals had a mean national amount of 1.3. The low number seems to be under reporting.

In Nemazi hospital (1000beds) the HCAI annual frequency was 5.7 in 2011 that with active surveillance and reporting it increased to 9.7% and 10.4% in 2016 and 2017 respectively.

There is an urgent need to establish reliable systems for HCAI surveillance and to gather data on the actual burden on a regular basis. Evaluation of the key determinants of HCAI is an essential step to identify strategies and measures for improvement. HCAI can be prevented and the burden reduced by as much as 50% or more.

Keywords: Healthcare associated infections, world, burden



Protect Breast and Breast feeding in Hospital

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Human milk not only provides passive protection, but also directly modulates the immunologic development of infant but formula fed infants and children have increased risks and rates of following conditions so it is important to keep mother's health and breast ,s health and integrity to avoid formula feeding and maintain exclusive breastfeeding: sepsis. NEC, Diarrheal disease, otitis media, lower respiratory tract infection. UTI, salmonella infection....

Also formula can harbor infectious agents ...

One of the reasons of not breast feeding or exclusive breastfeeding is breast problems: including infection and soreness. To prevent these problems and formula feeding some measures are presented:

Hand hygiene and breast feeding:

To know that wearing gloves by health workers is not a substitute for hand hygiene .During infant oral examination or when touching the breasts of a woman with a suspected infection must wash their hands before and after gloving..Also gloving is advised during examination of mother and baby if there is open cut on their hands. The most important measure in preventing nosocomial infections is hand hygiene. And it is of special concern with regard to preterm and ill babies who are particularly vulnerable to nosocomial infection. It is easy to transmit organisms on hands and under fingernails even pen and.. So it is important routinely clean them with sterilizing wipes between patients. Spreading of antibiotic resistant strains of bacteria including clostridium difficile and MRSA infections among postpartum women may manifest as mastitis with increased risk of progression to breast abscess. Infant may be colonized in hospital so it is best to hold and breastfeed immediately after birth with their mothers in order to colonize their infants with normal bacteria. To room-in with their infants to minimize non essential interventions by staff and also mothers should remind caregivers to wash their hands prior to handling the infant.

Also Milk expression and devices which contact with breast and breast milk should be considered including pump, shield etc.

Keywords: breastfeeding, hospital, infection



Comparison of Serum Procalcitonin Level with ESR, CRP and WBC and Blood Cultures in Prognosis of Bacterial Infection in Patients Admitted to Motahari Hospital of Urmia in 1395

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ARTICLE INFO

Keywords:

Procalcitonin
Sepsis
C-reactive protein
erythrocyte sedimentation rate
white blood cells
blood culture

ABSTRACT

Introduction: Sepsis is one of the leading of mortality and morbidity in hospitalized patients. In some studies procalcitonin (PCT) is mentioned as a potential biomarker for diagnosing sepsis. But its diagnostic value has been questioned in several studies, as a result; this study was accomplished in order to compare PCT diagnostic value with C-reactive protein (CRP) levels, erythrocyte sedimentation rate (ESR) levels, white blood cell (WBC) counts and blood culture in diagnosing the sepsis.

Materials and Methods: In a case-control prospective study forty five patients with sepsis with average age of 5 months to 6 years, hospitalized in Shahid Motahari hospital of Urmia in 2016 and 45 non septic patients who corresponded with the members of case group entered the study as a control group. Afterwards a blood test was taken in order to consider PCT, ESR, CRP, WBC and blood culture. They were analyzed by the SPSS software program (version 21).

Results: The PCT, ESR, CRP, WBC levels in the sepsis group were significantly higher than control group. The results of all blood cultures were negative among patients with negative and median PCT test. In patients with positive PCT results, the blood culture of 50% of them was positive and the rest were negative. The correlation of frequency distribution between blood culture and PCT results were significant ($P=0.003$).

Conclusion: The PCT level is a potentially useful diagnostic marker of sepsis and combining it's findings with WBC, ESR, CRP and blood culture findings will facilitate the prediction of sepsis.



Nursing care in febrile and neutropenic patients

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Fever is a single oral temperature of $\geq 38.3^{\circ}\text{C}$ (101°F) OR a temperature $\geq 38^{\circ}\text{C}$ (100.4°F) which lasts more than 1h and Neutropenia is an abnormally low number of neutrophils in the blood ($\text{ANC} < 1.0 \times 10^9/\text{L}$). The risk of infection in neutropenic patients is high. Examples of Contributing Factors of Neutropenia are Chemotherapy agents, Monoclonal antibodies, extensive radiation to bone marrow (e.g. pelvis, legs, and sternum), Stem cell transplants - at risk for severe, prolonged neutropenia, Cancers that affect bone marrow (e.g. lymphoma, leukemia or myeloma), Solid tumors, in previous course of therapy. A few Recommendations for the prevention of infection in patients with Neutropenia are Maintaining adequate hydration and nutrition incorporating protein, vitamin B and C during treatment assists with maintaining skin integrity, Avoid large crowds or anyone with signs of infection, Avoid constipation and straining to prevent trauma to rectal tissue, Bathe daily using warm water, Hand hygiene, Avoid touching face and mucous membranes as much as possible, Keep mouth clean by brushing with a soft toothbrush, Maintain appropriate temperatures for foods. Health Care Worker should observe the standard precautions.

Keywords: Neutropenia, infection, nursing care



Infection prevention strategies in children with cancer, an updates and review of literatures

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Infectious complications represent a major challenge for children with cancer. After they are being hospitalized for the first time, these children will prone to an increased risk of various types of infections which could be continued for the duration of the chemotherapy and even months after the completion of treatment. In the absence of any effective prevention strategies these complications can repeated over time and cause serious morbidities and mortality. Traditionally, infection prevention strategies had been summarized to chemoprophylaxis with antifungal, antiviral and anti-pneumocystis Jiroveci in high risk population. In recent years, along with other changes which are happened in diagnosis and treatment, prevention strategies also become update. This review is summarized updates in infection prevention strategies, with chemoprophylaxis and also non-chemoprophylaxis modalities in pediatric patients with hematologic malignancies.

Keywords:

Prevention and control, Hematologic Neoplasms, Chemoprevention, children



Crimean-Congo Hemorrhagic Fever (CCHF) and Acute Complicated Brucellosis: Clinicopathological Overlap

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Complicated brucellosis with severe pancytopenia and thrombocytopenia imitates several infectious and hematological disorders, such as Crimean-Congo hemorrhagic fever (CCHF). Both CCHF and brucellosis may be associated with severe thrombocytopenia. Therefore, it seems essential to take both conditions into account when listing the differential diagnoses for patients with bleeding and thrombocytopenia, even if they are afebrile. When these conditions are present, occupational status and/or presence of low-grade fever may help detect infectious diseases, such as brucellosis or CCHF. This review examines the similarities in the epidemiology, pathophysiology, and hemorrhagic diathesis of brucellosis and CCHF and assesses their clinical significance. Moreover, this paper highlights the importance of raising awareness among specialists of infectious diseases and other experts from fields such as hematology, gastroenterology, gynecology, dermatology, and urology regarding CCHF and brucellosis. The latter condition may present with less common symptoms including bleeding and thrombocytopenia, mimicking the former condition.

Keywords:

Brucella, Thrombocytopenia, Crimean-Congo Hemorrhagic Fever Bleeding, Overlap



The effect of treatment on infection control for care of patients with HIV

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Abstract

Scaling-up access to HIV/AIDS prevention, treatment and care for injecting drug users (IDUs) has been frustrated by the lack of a framework, indicators and agreed targets for interventions specifically targeting IDUs. Major progress in this regard has been achieved with the recent development of a joint Technical Guide for Countries to Set Targets for Universal Access to HIV Prevention, Treatment and Care for Injecting Drug Users and related technical consultations. This guide provides technical guidance to countries on setting ambitious, but achievable national targets for scaling-up towards universal access (UA) (Donoghoe, Verster et al. 2008). Increased access to HIV / AIDS prevention, as well as treatment and care for injecting drug users (IDUs), should be considered in of care systems.

In recent years, quality of life has been considered by researchers and clinicians as one of the most important outcomes of chronic diseases. Incarceration, homelessness, and marginally housed individuals Institutionalization and lack of secure housing present unique challenges to ART adherence and retention. Incarceration provides an opportunity to improve ART adherence, and the prevalence of HIV is higher among incarcerated individuals regardless of low-resource or high-resource setting. However, barriers still exist, including protecting confidentiality, stigma, and transitions from institutions to the community. Several international studies have shown that administering DAART to incarcerated HIV-infected persons increases adherence and viral suppression when compared with self-administration (Thompson, Mugavero et al. 2012). A cross-sectional study was conducted on 139 patients and 139 healthy individuals matched with age and sex with patients. It was determined that variables such as sex, marital status, education, Counts of CD4 + cells and clinical stage had a significant effect on the quality of life of patients with HIV / AIDS (*M. Nojoomi and Kh. Anbari). In their view, among social outcomes, discrimination and racism against HIV-infected people and their exclusion from society and relatives were more important (Fallahi, Tavafian et al. 2013). Increasing public awareness, especially through mass communication media, can prevent discrimination and discrimination against HIV / AIDS.

Keywords:

Injecting drug users (IDUs), HIV / AIDS, Care, Infection control



Sticky mat: Yes or No?

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ARTICLE INFO

Keywords:

Sticky mat, infection nosocomial

ABSTRACT

Introduction: The use of sticky before entering intensive care units and operating rooms has been obsolete in our country for many years. So this review article survey the role of sticky mat in infection control.

Materials and Methods: The search was conducted in order to find related articles in database Pubmed, Google scholar using keywords "sticky mat, infection, nosocomial" relevant articles during the period 1900 to 2018 were reviewed.

Results: Gaya's has declared the mats can protect the hospital wards from dusts and Clostridium spores, but have no role in reduction of hospital infections. Fenelon, Daschner show mats reduced the amount of different bacteria in ICUs but Schulster revealed that mats, disinfectants and shoe covers have no role in control of nosocomial infections. In NDSC guideline the sticky mats have mentioned as an efficient way for reducing Aspergillus infection in hospital wards. According to CDC guideline mats have a little role in controlling the hospital infections if used in the entrance of the wards. Kenneth found that use of contamination control flooring or shoe covers significantly reduced the amount of organic material present on floors and bacterial contamination of footwear was significantly lower after the use of shoe covers than after the use of adhesive mats or contamination control flooring. Dahmardehei noted that sticky mat could reduce contamination at hospital wards.

Conclusion: There were many controversies regarding the role of mats in hospitals so further studies with more samples are needed to re-evaluate the role of mats in hospital infection control.



Hospital Disaster Safety Assessment in north eastern of Iran: The Results of MUMS`s Hospitals assessment

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ARTICLE INFO

Keywords:

Hospital
Safety
Disaster
Emergency
Iran

ABSTRACT

Introduction: Iran is exposed to a variety of natural and man-made disasters. Disasters impose considerable damages to population and infrastructure including hospitals. In both developing and developed countries, hospital safety versus disasters is a challenge because the hospitals must be able to continue their functions during disasters. To assessment of hospital safety for disasters, the World Health Organization (WHO) has developed the Hospital Safety Index (HSI) that is a rapid, reliable and low-cost tool. This study presents the results of the disaster safety assessment in hospitals of khorasan Razavi province in 2015.

Materials and Methods: We applied adapted version of HSI (FHSI2) and self-assessment approach to assess the disaster safety in mums. This tool is consist of 152 items categorized in 3 components, including structural, non-structural and emergency and disaster management. Safety level was categorized into 3 levels in each item: not safe (0), average safe (1) and high safe (2). Hospitals were classified to three safety classes according to their total score: low (≤ 34.0), average (34.1- 66.0) and high (> 66.0) safety.

Results: In this study, we assessed 26 teaching hospitals and 16 private hospitals. Our study showed that the overall disaster safety score of the khorasan`s hospitals was 62.82 out of 100. Average safety scores out of 100 were 59.42 for emergency and disaster management capacity, 61.45 for non-structural component and 65 for structural component in our hospitals. There have been statistically significant differences between teaching and private hospitals in structural, non-structural and functional dimensions. (p value < 0.05)

Conclusion: To enhance the hospital safety for disaster, we require multi-disciplinary collaboration and a commitment from high levels of authorities. For attaining this purpose, we recommend: 1) establishment of a national committee for hospital safety in disasters, including all stakeholders; 2) supervision on proper implementation of the safety standards in structure of new hospitals; 3) enhancement of readiness and safety of non-structural and structural components of the existing hospitals and encourage the hospitals to invest and planning for disaster preparedness.



The Effect of Influenza Vaccination on Workers' Absenteeism in Hospital Personnel in Iran

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ARTICLE INFO

Keywords:

Vaccination
Influenza
Absenteeism

ABSTRACT

Introduction: Influenza like illness (ILI) is the most common cause of absenteeism in the workplace. This study was designed to assess the effect of anti-influenza vaccination on reducing illness and absenteeism among health care workers (HCWs) of two academic hospitals of Mashhad University of Medical Sciences in Iran from September 2015 through June 2016.

Materials and Methods: In this follow up study 166 health care workers in two academic hospitals were observed for 9 months. Influenza vaccine was administered to 83 HCWs on a voluntary basis in September 2015. Respiratory symptoms and absenteeism due to influenza like illness in vaccinated group were evaluated and compared with unvaccinated group every 3 months. A questionnaire was also administered for collecting the socio-demographic and occupational data such as age, sex, job and etc. in the studied groups.

Results: The mean of age in the vaccinated and unvaccinated groups was 36.69 ± 8.43 and 37.12 ± 8.3 respectively ($P=0.73$). There was no significant difference between two studied groups regarding sex, marital status, hospital, shift of work (fixed or rotational), educational degree, smoking and history of atopy. The individuals who were absent from work due to influenza during the first and second trimester were 13 (15.7%) and 7(8.4%) in the case group and 31(37.3%) and 24(28.9%) in the control group respectively ($P=0.003$, $P=0.001$). During 9 months of study 23(27.7%) individuals in case group and 51(61.4%) in control group were absent from work. ($P=0.001$)

Conclusion: In this study the vaccinated group showed lower flu-like symptoms and sickness absenteeism compared with unvaccinated group. Therefore we can conclude influenza vaccination is very effective in reducing sickness absenteeism in hospital personnel and annual influenza vaccination is recommended for this job groups.



Legal issues related to infectious diseases

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Every day, complaints are filed against the medical staff due to negligence with health and infection-related issues. Negligence in the legal sense means that one does not perform assigned task. The task that the legislator has placed on that person. The legislator in the Islamic Penal Code, adopted in 1392, defines negligence as carelessness or omission and also includes lack of skill and non-compliance with state regulations as part of this.

Omission: On performance of an act which scientifically and technically is expected to be carried out. eg: non-administration of antibiotics for streptococcal sore throat.

Carelessness : Performance of an action which scientifically and technically should not be done.

eg: Prescribing antibiotics for a patient with a viral infection

Lack of skill: Includes cases in which the physician does not have the scientific and technical expertise necessary for a certain work. eg: Incorrect intra-articular injection of an antibiotic.

Failure to comply with government regulations: Namely, failure to pay attention to regulations, departmental letters, regulations of administrative superiors, medical system, Ministry of Health eg: Not having an autoclave at the health center.

It is hoped that complaints against medical staff will be prevented by complying with legal requirements

Keywords:

Omission, carelessness, infectious



Evaluation of Antibodies to MMR vaccine in children in khorramabad

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ARTICLE INFO

Keywords:

Antibody
Measles
Mumps
Rubella
Children

ABSTRACT

Introduction: In Iran, a program for the eradication of measles, rubella and mumps has been launched under the name of the MMR vaccination program for children. Due to the incidence of disease in many infants and the measurement of antibody level, determining the appropriate age for vaccination is very important. The aim of this study was to determine the antibody level and immunity from vaccination in children younger than 3 years of age who received two times the MMR vaccine.

Materials and Methods: This cross-sectional descriptive study was conducted on children under three years of age with two-time MMR vaccination in Shahid Madani Hospital in Khoramabad during a period from February 2016 to August 2016. Then, 5 ml of blood was taken from these children and a quantitative measure of the serum antibody (IgG) was measured in a specific laboratory using electrochemical luminescence for measles, measles and mumps. All data were analyzed using descriptive and inferential statistics using SPSS software version 19.

Results: In this study, 100 infants who referred to Khorramabad Municipality of Shahid Madani Hospital were evaluated for the status of MMR vaccination status. The mean age of the children was 28.2 ± 5.06 months. The majority of children (56%) were boys, 29% 18 to 24, 41% between 25 and 30 months, and 30% between 30 and 36 months old. In this study, the level of IgG antibody to measles after vaccine injection was significantly low.

Conclusion: According to the results of this study, it can be concluded that the studied population requires re-vaccination and further follow-up on the safety level.



Importance of hand hygiene

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One of the most important factors that cause patients mortality and morbidity, especially in intensive care units, is health care associated infection. The most important way to transfer the hospital infection to others is hands of the staff.

Compliance to hand hygiene practices varies according to the health care provider. This topic is different in physicians, nurses and students from different medical groups and professors, with different degrees and disciplines, and even services and different departments. Hand hygiene is different even in different shifts. In the afternoon and night shifts due to crowded sectors, lack of presence of the chief of the department and, consequently, lack of adequate supervision, Compliance of hand hygiene is reduced in the afternoon and night.

There are several factors that are generally effective in adhering to the legacy hotlines:

1. Scientific and practical beliefs and beliefs about the importance and impact of this issue
2. Provide sufficient time by increasing staff in each shift
- 3- Continuing education and repeatedly emphasizing of hand hygiene
4. Prioritize the hygiene of hands in educational and therapeutic centers

Scientific and evidence-based, the importance of the issue should be highlighted for high-level officials.

It must be clear that economically and socially and ethically hand hygiene is worthy. In the event of justification of the authorities, gradually this issue will be part of the culture of the people and the healthcare staff.

Keywords: Hand hygiene, importance, healthcare staff



Crimean Congo hemorrhagic fever and a new differential diagnosis, An experience in south Eastern Iran

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The Crimean Congo hemorrhagic fever (CCHF) caused by viruses of Bunyaviridae is transmitted by arthropod-borne virus. The first case of CCHF in 1378 was reported in Iran, especially in the mating season (spring and summer). In this disease, after an average 3 days (common period) after tick bite or contact with tissue or bloody infections, the patient presents with high grade fever, headache, chest pain and nausea. At this stage, thrombocytopenia leukopenia and increased Liver enzymes occur. Some of these patients undergo hemorrhagic bleeding from mucous and skin on day 3 to 5. Failure to do so will result in a relatively long recovery.

In year 1395, four patients living in rural areas of Kerman province had a history of bite, followed by chills, muscle Pain and headache. They were referred to Afzalipour hospital with CCHF diagnosis. All 4 patients had thrombocytopenia, elevated liver enzymes (CPK and LDH) and rash but without bleeding disorder. During hospitalization, according to the history of tick bites, clinical symptoms and maculopapular rash, they were diagnosed as Mediterranean fever and treated with doxycycline. They were discharged with complete recovery between 2 and 5 days. Each of the 4 patients had negative results for CCHF. Mediterranean fever was confirmed after a complete review of serum in each of the four cases,.

CCHF despite the recognition of multiple infectious and non-infectious diseases is considered as the only infectious disease in Iran. Our recent experience with these patients suggests that, in addition to differential diagnosis that the therapists have been considering in the past, they should also be aware of the Mediterranean fever. The city of Kerman in 1395 indicates an almost equal prevalence of these two diseases. It is suggested that currently, until the study in other provinces, at least in Kerman province, if you see a clinical picture in accordance with CCHF, an experimental treatment for Mediterranean fever in patients with history of mite bites should be performed.

Keywords:

CCHF, differential diagnosis, Mediterranean fever



The roles and responsibilities of health educators in Prevention and control of infection

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Health professionals have essentially complex roles, including within clinical education. Health education is an academic field characterized by interdependence between health and education, a focus on experiential learning, and the translation of knowledge and theory to practical health care problems, patients and clients and employees.

Clinical Health educators are typically employed by the health service, are predominantly involved in clinical service provision and clinical teaching, and are often affiliated with an educational institution.

They have an important role in educating for capability and health workforce Development.

Clinical Health educators have a leadership role in supporting and facilitating programs for Health Service Providers in the prevention of communicable disease and health care associated infections. The purpose of the Roles and responsibilities in the control of communicable and infectious disease and health care associated infections is to establish clear knowledge with regard to control and communicable disease and health care associated infections.

In summary, the roles and responsibilities of health educators can be summarized as follows:

the prevention of disease before it occurs

the control of infectious disease transmission

the prevention of the development of complications of chronic disease

to promote and protect the health status

To identify and respond to opportunities to reduce inequities in health status.

Conduct of health education program in a clinical setting.

Generally, the health education specialist will often find two roles: one as a direct deliverer of educational activities to patients and another as a resource in health education to the professional staff. Hospitals are (being) encouraged to broaden their health education functions to include (new) areas of service (such as) education of employees about health; and education of the community."

Keywords: Health education, health- care associated infections, professional staff



Relations between malnutrition and nosocomial infections in children

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Nosocomial infections and malnutrition in children are of major concern in public health. However, the interactions between these two entities are not well established. Relationship between undernutrition and infection are complex, and are reviewed in this article. Malnutrition is known to impair immune function, specially cell-mediated immunity. The effects of diet and infection on the nutritional status of a child can vary according to the patterns of feeding and types of food consumed and the age of the child. Specific nutritional deficiencies can subsequently influence immune status and adaptive immunity. The urinary tract and lung are the most common sites of hospital-acquired infection. Risk factors for nosocomial infections depend on the infection's site and care conditions. A number of other risk factors have been identified in patients, previous antibiotic therapy, neurologic diseases, respiratory diseases, diabetes mellitus, decreased consciousness, deteriorating health, unsafe swallow, aspiration, nasogastric tube feeding, inhalation therapy, increased agitation, central vascular or peripheral line, history of nosocomial infection and sedation medication. However, some studies have evaluated malnutrition as a possible risk factor for nosocomial infections in these patients but the results were not strongly in favor of it. In this article, the relationships between malnutrition and nosocomial infection (both obesity and undernutrition) are reviewed.

Keywords:

Malnutrition, nosocomial infection, immune system, undernutrition



The study of barriers in hand hygiene from the perspective of clinical staff in Taleghani Tabriz Educational Center

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ARTICLE INFO

ABSTRACT

Keywords:

Hand Hygiene
Nursing staff
Infection control
Hospital

Introduction: Infections caused by providing health care are one of the most common causes of mortality and disability in hospitalized patients. Hand hygiene is the first step in preventing these infections.

Materials and Methods: In this descriptive cross-sectional study, 181 medical personnel working in NICU, neonates, women's surgery, LDR, operating room and CSR of Taleghani Educational Center were studied by census method. To collect the data, a demographic questionnaire, a questionnaire prepared by Arshadi, et al (1393) in the context of the causes of hand hygiene and the subscale of conscientiousness NEO-FFI personality inventory was used.

Results: Obstacles to staff's hand hygiene were assessed in four areas: individual, managerial, equipment and environment and their relationship with the work conscientiousness factor. According to the present study, according to staff's attitude, the most reason for non-compliance with hand hygiene were individual and environmental factors. High conscientiousness was less affected by its barriers in all four domains, and Pearson correlation coefficient was meaningful in all areas with a confidence interval of 0.95. (P = 0.05)

Conclusion: Most of the barriers to hand-washing include the type of attitude toward the effect of hand hygiene and its importance in controlling hospital infection, high workload, high numbers of patients, and lack of compliance with the number of staff to bed, lack of tissue paper to dry hands after washing, the length of the distance between the hand-washing area to the patient's bedside and poor quality soap liquid and disinfectant solutions.



The effect of continuous restriction strategy in antimicrobial stewardship programs

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ARTICLE INFO

ABSTRACT

Keywords:

Restriction strategy
Antibiotic stewardship
Carbapenem

Introduction: Antibiotic resistance is a major and increasing problem of infectious diseases. The growing problem of antimicrobial resistance (AMR) has led to call for antimicrobial stewardship programs (ASP) to control antibiotic use in healthcare condition. This study aimed at assessing effect of continuous restriction strategy about antibiotic stewardship in a teaching hospital, Iran.

Materials and Methods: In this study, the Carbapenem restriction strategy was compared over the three months of 2015 and 2016. Carbapenem could be started by internist but during 72h an infectious-diseases specialist commented on the antibiotics (Stop/Change/Continue).

Results: The findings showed that the antibiotic administration by the internists was reduced in 2016 compared to the first days of the study. A 25% decrease in the request for consultation with an infectious disease specialist, 40% reduction in Carbapenem administration and 17% change in the type of antibiotic was observed in the internal wards in 2016.

Conclusion: Continuous Restriction Strategy in the field of Antimicrobial Stewardship Programs is a safe and cost-effective strategy for improving antibiotic therapy and to reduce multi-drug resistance.



Injection Safety: What is the correct way to inject Single - Dose/Single - Use and Multi-dose Vials?

Forough Mowla

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ARTICLE INFO

Keywords:

Standard Precautions
Injection Safety
single dose/single vials
multi-dose vials

ABSTRACT

Introduction: It is estimated that 16 billion injections are provided worldwide in developing and transitional countries. Safe injection practices are part of Standard Precautions and are aimed at maintaining basic levels of patient safety and provider protections. One of the important principles of safe injections is the proper usage of single-dose/single-use vials.

Materials and Methods: It is a non-systematic/narrative research. More than 20 guideline and article were reviewed. The purpose of this study is to find the correct method to inject single dose/single use and multi-dose vials, even in conditions of deficiency.

Results: Unsafe injection practices put patients and healthcare providers at risk of infectious and non-infectious adverse events. This harm is preventable. Dedicating a single-dose/single-use vial to one patient is a critical element of proper infection control.

Conclusion: There is a little information about using of single-dose/single-use vials, the use of aseptic technique and the statistics of healthcare acquired infections due to inappropriate use of these vials in Iran. However, in the inspections of hospitals, it is observed that the injection safety guidelines are not implemented and ignored due to different reasons. Applying of universal guidelines about injection of single dose/single use and multi-dose vials in hospitals, despite the medication shortage or other reasons, will prevent the outbreak of healthcare acquired infections in patients.



Prevention of infection in intensive care unit

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Complete prevention of infection in intensive care unit is a very difficult task, on the other hand, implementation of special programs, and surveillance can reduce ICU acquired infections significantly. Growing use of devices and bedside procedures are major concerns, although their use often necessary for life support but cause many infectious complications.

Pneumonia, bloodstream and urinary tract infections are the most common infections in critically ill patients. Hand washing and barrier precaution, judicious use of antibiotics, and stress ulcer prophylaxis are general preventive measures. There is also specific recommendations for each category of infections: 1) Head of the bed elevation, avoiding routine changing of tubes, use of chlorhexidine mouthwash and early enteral nutrition for ventilator-associated pneumonia (VAP) prevention 2) Selection of appropriate insertion site, use of gowns, gloves, and strict aseptic technique for catheter-related bloodstream infections (CRBSI) and 3) Using correct technique of catheter insertion, avoiding routine change of catheters and maintenance of good urine flow for prevention of urinary tract infections(UTI).

Keywords: Intensive care unit, infection, prevention



Potential food and waterborne infectious diseases & outbreaks following natural disasters

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Disease epidemics are not directly linked to natural disasters. Many related factors such as massive population displacement, environment change and increase the probability of invasiveness of existing pathogens may occur in these conditions. In fact epidemics/ outbreaks of Infectious diseases do not exist in the impact phase of a disaster. It may occur several days after recovery phase of disaster.

Risk of food and water borne diseases resulted from compromised personal hygiene

Diarrheal diseases are a leading cause of death (40%) in disaster and camp settings. Epidemics are commonly due to contamination of water with fecal material and water during transport and storage. Outbreaks may occur because of sharing water containers and cooking pots, limited availability of soap and contaminated food.

Epidemics of Diarrheal disease may occur after population displacement by flood occurrence. In Iran, 1.6% of the 75,586 persons displaced by the Bam earthquake in 2003 were infected with diarrheal diseases. This was due to poor hygiene, crowding, lack of potable water and ineffective sanitation. Because of poor water sanitation and sewage system, diarrheal diseases may occur after natural disasters in developing countries.

Leptospirosis is an organism that can be transmitted through contact with contaminated water, food and soil contaminated with infected animals (e.g., rodents) urine (leptospire). Contamination may occur through contact of broken skin and mucous membranes with water, damp soil or mud contaminated with rodent urine. Floods may cause a condition that may facilitate the proliferation of rodents and the spread of leptospire in a human community. The disease is usually reported following flooding in developing countries.

Referred to decrease sanitation and healthcare facilities and unavailability of optimal food and drug equipment during disasters, gastrointestinal infection may become epidemic. This phenomenon may affect the health being and growth of children and may cause mortality and morbidity in this susceptible population. On the other hand children are vulnerable to FTT and this condition adds the severity of their GI tract infections. Paying special attention to water and food health is an important priority in control of epidemics during disasters.

Keywords: Disaster, Infectious disease, water and food health



Catheterrelated bloodstream infections

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Catheter related bloodstream infections (CRBSIs) can lead to increasing length of stay, cost, morbidity and mortality in the hospital. Patients and their underlying disease, type of catheter, site of insertion, duration of catheterization, frequency of catheter access, poor aseptic technique, and contamination of equipment can increase the rate of CRBSs. It is necessary to consider specific strategies to modify CRBSIs. Increasing knowledge and competency of health care personnel regarding to use catheters, insertion and maintenance of catheters is the most important issues in general wards and intensive care units that is possible by means of education and training. Decreasing ratio of the patient to nurse can lead to better catheters care.

Hand hygiene, maximal barrier precautions for catheter insertion, skin preparation with effective antiseptic, optimizing catheter site selection are some consideration at catheter insertion. Catheters must be assessed and evaluated daily. Catheter site must be covered with sterile dressing, except of hemodialysis catheters, the topical antibiotic ointment should not be used on insertion site. Recommendation about replacement of administration sets must be considered. In long term catheters an antimicrobial lock solution is used in order to prophylaxis. If catheter isn't essential or no longer needed, and in cases which signs of phlebitis developed it must remove.

In addition to these strategies, standardized protocols and checklists for prevention of CRBSIs, team working and quality improvement programs can be useful.

Keywords:

Bloodstream infections; intravascular catheters



The Effect of Educational Programs of Infection Control Standards on Observing Infection Control Standards in Endoscopy Units in Isfahan Medical Centers

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Healthcare services-related infections

ABSTRACT

Introduction: Nosocomial infections are one of the biggest health care problems all over the world which annually involve two million people And which charges 9 billion dollars in addition to treatment costs. There is also the risk of nosocomial infections in gastrointestinal endoscopy. Accordingly, this study Performed to determine the effect of educational programs of infection control standards on observing infection control standards in endoscopy units in Isfahan medical centers in 2016.

Materials and Methods: In this study, which is carried out through surveying, all Isfahan medical centers with active endoscopy units including 16 hospitals were selected. Data collection instruments consisted of one checklist with specific evaluation areas in accordance with infection control standards such as specialized human resources and standard precautions, use of personal protective devices by the personnel Of the aforementioned units, and healthcare processes and infection control which was recorded by the researcher, being present in the observation centers, questioning and assessing the related documents. Data were collected using descriptive and conclusive statistics and then analyzed after being coded by SPSS v. 18.

Results: results indicated that the total mean score of observing infection control standards in endoscopy units was significantly higher one month after intervention compared to the score before intervention ($P < 0.001$). The mean score of observing infection control standards in endoscopy units of university hospitals was significantly higher than that of private-sector hospitals in contexts such as specialized personnel ($P = 0.02$), health processes ($P = 0.04$), and total score ($P = 0.03$) before the intervention; However, no significant difference was observed between the two types of hospitals one month after intervention ($P > 0.05$).

Conclusion: Obtained results show that training endoscopy staff with processes and infection control standards has an effect on the extent of observance of these standards and given the importance of patient safety in the medical centers as one of the strategic aims of hospitals, providing specialized training for personnel has an effect on improvement of personnel performances.



Crimean-Congo hemorrhagic fever in pregnancy

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Introduction: Crimean- Congo hemorrhagic fever (CCHF) is transmitted by ticks and characterized by fever and hemorrhage. CCHF is a potentially fatal viral infection with mortality rates 5–30%. In pregnancy CCHF infection should be considered in the differential diagnosis of HELLP syndrome (hemolytic anemia, elevated liver enzymes, low platelet count), and obstetricians should be familiar with the characteristics of CCHF infection.

Case report: A case of pregnant woman with gestational age was 38 weeks presented who admitted to the obstetrics emergency department of Ghaem hospital in Mashhad with fever and severe vaginal bleeding. The patient's examination was performed and petechiae were seen on her body. Laboratory findings were thrombocytopenia, leucopenia, hyperbilirubinemia with elevated transaminases, and prolongation of prothrombin time. Her husband was shepherd and she had exposure with animal tissue two week ago. Pregnancy termination was done by cesarean section and her fetus was dead born. During the cesarean, needle stick injury was happened for surgeon. Unfortunately patient died one day after surgery because of DIC. Ribavirin drug started for surgeon. Fortunately she survived.

Keywords: Crimean- Congo hemorrhagic fever,

Pregnancy, DIC



Nosocomial infections in newborn infants

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Nosocomial infections in newborn infants are defined as Exposure to microorganisms at birth the Incubation period is few to many days. Definition by National Nosocomial Study (NNS) is all infectious diseases in the first 28 days of life regardless of the actual cause.

The incidence is between (0.9% -1.7%) in NICU as high as 25% and in primary Care Nurseries (0.86 %.)

Clinical presentations are non specific such as skin infection, diarrhea, respiratory infection, septicemia, NEC, poor feeding, apnea, cyanosis and hypotension.

Historically shift in etiology every 10 years in America is reported as : ,staph aureus,1950 's, *Pseudomonas aeruginosa*, 1960's , group B *Streptococci*, 1970's, methicillin resistant *S. aureus* and *S. epidermidis*, 1980 's. gram negative organisms *Klebsiella*, *E.coli*, *Salmonella*, *Enterobacter*, *Citrobacter*, *Campylobacter*, *Candida* and viruses.

All newborn infants are immunologically deficient especially premature infants. Duration of hospitalization , instrumentation ,TPN, respiratory managements, antibiotic therapy are the predisposing factors.

Sources of infection are: intrapartum scalp electrode ,umbilical clamp ,intravascular catheters, resuscitation equipments, hand lotions and disinfectants, topical ointments , intravenous fluids (TPN), enteropathogens in formula, fecal oral (*clostridium difficile* and *Coxsackievrius*) and lead of monitors.

Recognition: cluster of similar cultures within a short time, low disease to colonization ration maybe 1-2/100, and colonized infant may not present the disease till after discharge.

Prevention: hand washing, investigation for colonization, change solutions, change prophylactic antibiotics, cord care, bathing practice, equipmentsterilization

Keywords: Nosocomial infections, neonates, etiology, prevention



Selenium Deficiency and Prevention of Viral Infection

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Selenium is an essential trace element related to the immune response. The role of nutrition in infectious disease has long been associated with changes in the immune response of the nutritionally deficient host. It has been shown that nutritionally deficient are susceptible to a wide variety of infections.

The effect of selenium on the antioxidant glutathione peroxidases and its role in the endothelial immune system is known. When selenium is deficient, we can assume that glutathione levels will be dramatically lower. Recently, the importance of selenium in the progression of some viral diseases has been revealed. Selenium modulates activation of CD4⁺ cells.

The previously unsuspected role of host Se status in the emergence of viral disease promises some new strategies for prevention and treatment. We must be careful not to encourage the overconsumption of Se supplements. It must be remembered that selenium is a toxic mineral with a fairly small therapeutic window.

A balanced and sufficient supply of macro- and micronutrients is important to support host immune defense and resistance against pathogens. The habitual diet is often not sufficient to meet the increased demands for micronutrients in infectious diseases. Dietary multi-micronutrient supplements containing selenium up to 200 µg/d have potential as safe, inexpensive, and widely available adjuvant therapy in viral infections as well as in coinfections by HIV and **M. tuberculosis** to support the chemotherapy and improve quality of life. Dietary supplementation with selenium-containing multi-micronutrients might also be useful to improve supportive care and to strengthen the immune system of patients suffering from newly emerging viral diseases.

Keywords:

Micronutrient, selenium, Infection



Serious life threatening to the hospitalized patients in a Hospital, Tehran

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Infection caused by multidrug resistant Gram-negative bacteria (MDR-GNB) poses a significant threat to infection control programs, and thus requires immediate action. *Klebsiella pneumoniae* is one of the most commonly isolated GNB in nosocomial infections and the most problematic member of Enterobacteriaceae, associated with the highest rates of carbapenem resistance.

There are clear evidences for emerging of infections caused by *Klebsiella pneumoniae* at Iranian Hospital. In a recent study the rate of infection with this organism has overtaken the infections caused with *Escherichia coli*. The number of isolates of *Klebsiella* in one of the hospital showed 60% increase in 2017. Importantly, more than 10% of these isolates were found as resistant to carbapenems. Analysis of carbapenem resistant isolates showed 90% of them were MDR. The MDR isolates belonged to different clones as determined by PFGE. Transmission from different buildings and wards of hospital is quite possible as some clones at different wards were identical. Moreover, closing the ICUs and following sterilization do not protect the ward from the dominant clones that are moving among the Department.

It appears that isolates of *Klebsiella pneumoniae* is a serious and emerging problem because of their resistance and virulence factors.

Keywords: Infection, Gram-negative bacteria, multidrug resistant



Treatment of Patients with Crimean-Congo Hemorrhagic Fever and Preventative Strategies

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Crimean-Congo hemorrhagic fever (CCHF) is a viral tick-borne disease caused by a nairovirus in the family of Bunyaviridae. Ixodid tick, in the genus of Hyalomma, is a reservoir and also a vector for the CCHF virus. Transmission to humans occurs through contact with infected ticks or infected human and animal tissues and blood. Human-to-human transmission is also reported as a nosocomial infection. High prevalence of disease has been reported among farmers, and more specifically among those whose jobs involve contact with animals and carcass (farmers and butchers). Disease is mostly common in Sub-Saharan Africa, Asia, Eastern Europe, and in the Middle East. CCHF was a rare disease in Iran before 1990. During the last 18 years, it has been reported from different provinces of Iran; mostly from Sistan and Baluchistan province in the Southeast of Iran (more than 2/3 confirmed cases). Patients with CCHF may develop either a mild, non-specific febrile syndrome or a more severe disease with vascular leak, hemorrhage, DIC, and shock. Mortality rate has been reported between 5 to 80 percent (average 30%) depending on the geographic location and medical support treatment. Although, Ribavirin is effective against CCHF virus and this effect has been shown in clinical studies especially in Iran, but its efficacy is still questionable due to contradictory clinical studies in other country. Unfortunately, there is no FDA- approved vaccine for prevention in Human and efficacy of other options including CCHF hyperimmunoglobulin, steroids, IVIG and CCHF monoclonal antibodies is still controversial.

Keywords:

Crimean –Congo Hemorrhagic Fever, Control, Prevention, Treatment



Probiotics in Gastrointestinal infections

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The composition of intestinal flora plays a vital role in human health from as early as birth. However, gastrointestinal infections are still a significant cause of morbidity and mortality worldwide, particularly in developing and under developed countries. The use of probiotics seems to have an effective role in prevention and treatment of GI infections in several ways. Probiotics may stimulate and regulate immune system, induce the host to produce antipathogenic factors, prevention of pathogenic bacteria growth and stimulation of mucosal barrier function. There are some evidences in favor of the efficacy of probiotics in prevention and treatment of acute infectious diarrhea, prevention of antibiotic-associated diarrhea, prevention of nosocomial diarrhea, prevention of traveler's diarrhea and prevention of NEC. This paper will review the efficacy of probiotics in prevention and treatment of gastrointestinal infections.

Keywords:

Probiotic, prebiotic, synbiotic, gastrointestinal infections



Why they don't use alcoholic hand rubs? Is it alcohol or another cause?

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ARTICLE INFO

Keywords: alcohol- based hand rub ,nurse,concern,religion

ABSTRACT

Introduction: Multiple studies report respiratory and dermal absorption of alcohol after alcohol- based hand rubs (ABHRs) use. We surveyed Shiraz Nemazee Hospital nurses concerning their hand hygiene (HH) knowledge, practices and opinions, including possible religious barriers to ABHR use.

Materials and Methods:341 nurses were involved in this questionnaire based study about alcohol use in Islam, their opinion about the benefits and limitations/adverse effects of ABHRs use and their reasons for using or not using ABHRs.

Results:81.6% of responders are female. While 96.8% of nurses reported that they used ABHRs, however 53.8% declared that they preferred traditional soap-and-water hand washing .18.7 % of nurses believed that by using ABHRs, their hands became NAJIS (a religious concept implies impurity and uncleanness and Najis food, object or material must not be eaten or touched). 69.6% of nurses felt that when busy, they would forget to rub with ABHRs, while 59.9% reported had more important things to do than use ABHRs. Also, some of HCWs declare they preferred not to use ABHRs, 31.3 % due to religious matters and 32.2 % concerning about skin damage.

Conclusion:When it came to ABHRs use, adverse skin reaction seems to be one of HCW's major concerns. Many of HCWs believe they can ignore using ABHRs, when they are busy or have important things to do, the hospital authorities should reconsider about education programs targeting this issue. Although a large number of Muslim HCWs use this alcohol containing products conservatively, the good news is that they use them finally.



Bacterial Sinusitis

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In acute community-acquired bacterial sinusitis, *S. pneumoniae* is the most frequently isolated organism, followed by non-typable *H. influenzae* and *M. Catarrhalis*. Sinusitis may be classified as: acute, sub-acute, chronic, or recurrent. Anterior and/or posterior mucopurulent nasal discharge, nasal congestion and obstruction (stuffy nose), facial pain or pressure and fever are the most signs and symptoms. For patients who have not received antibiotics in the previous 4 to 6 weeks: amoxicillin or amoxicillin/clavulanate remains an excellent first-line agent. For patients who have received antibacterial agents in the previous 4 to 6 weeks high-dose amoxicillin/clavulanate Or a respiratory fluoroquinolone such as levofloxacin or moxifloxacin may be used. Macrolides (clarithromycin and azithromycin) are not recommended for empiric therapy, due to high rates of resistance among *S.pneumoniae* (30%). The exact duration of treatment is unknown. A treatment course of 10 days is typical. If rapid improvement does not occur, the patient should be treated until 7 days after symptoms resolve.

Keywords:

Sinusitis, clinical, treatment



Study on final diagnosis and outcome of children admitted with ESR higher than 100mm/hr in Tabriz children's hospital

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ARTICLE INFO

Keywords:
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Children
Admission
ESR

ABSTRACT

Introduction: Erythrocyte sedimentation rate (ESR) is one of the most common laboratory tests in clinical medicine. ESR is determined by aggregation of red blood cells, in which erythrocytic and plasma factors (such as high molecular weight proteins such as fibrinogen and globulins and immune complexes (cryoglobulin)) are involved in this process. The aim of this study was to determine the outcome and final diagnosis of children with ESR higher than 100mm/hr who had been hospitalized in Tabriz children's hospital.

Materials and Methods: In this study, patients who had primary ESR ≥ 100 were investigated. The final diagnosis (if any), outcome (leave, recovery, unspecified), hospitalization time and other laboratory tests such as leukocytes count, anemia and acute phase reactants including CRP, Ferritin, LDH, and platelet counts were evaluated.

Results: The mean \pm SD age of the patients was 4.44 ± 3.76 years (Range: 0.2 to 17 years). Out of 120 patients, 57 patients (47.5%) were males and 63 (52.5%) were females. The frequency underlying causes for hospitalization were pneumonia 20 patients (16.66%), urinary tract infection 19 patients (15.8%), unspecified cause 15 patients (12.5%), and vasculitis in 11 patients (9.17%). one patient (0.83%) with encephalitis died during the study. The mean \pm SD of ESR test in patients was 115.17 ± 12.49 mm / hr. The lowest ESR recorded among patients was 0/100 mm / hr and the highest ESR was 0.15 mm / hr.

Conclusion: There are many distinct diagnoses for ESR > 100, of which infectious was the most common underlying cause; which mean, ESR > 100 in children unlike adults do not include any serious illness and children often recover from their disease. Despite of the low frequency of vascular collagen disease in this study, more research and attention is recommended in this regard.



Influenza Activity in Iran in 2017

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ARTICLE INFO

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Influenza
detection and typing
Iran

ABSTRACT

Introduction: Influenza is the most important zoonosis disease and a serious public health problem that causes severe illness and death in high risk populations. Influenza spreads easily from person to person and affects people in any age group. Influenza, in addition to the pressure on the health system, can cause heavy economic damage. Fortunately, influenza vaccination is the most effective way to prevent disease and antiviral drugs are available for treatment.

Materials and Methods: A total of 7090 clinical specimens including throat swabs were collected from severe acute respiratory Infection in different age groups in 2017 and transported to the National Influenza Center, Tehran University of Medical Sciences. Influenza virus detection and typing/subtyping were carried out with real time RT-PCR kit, SuperScript III Platinum (Invitrogen).

Results: Of 7090 collected specimens, 625 (8.8%) were positive for influenza viruses. Influenza A/ H3N2, B, and A/H1N1 accounted for 260 (41.6%), 260 (41.6%), 105(16.8) of the virus positive samples, respectively. In 2017 sub type of influenza B viruses changed from B/ Victoria to B/Yamagata.

Sequence analysis of the neuraminidase gene on 18 of the isolates has been carried out for antiviral influenza sensitivity; all of them were sensitive to oseltamivir and zanamivir.

No avian influenza was detected from cases who have contacted to birds.

Conclusion: It is important to strengthen the surveillance system for influenza and other respiratory infections and transfer the data appropriately to medical professionals, stakeholders to better planning the resources needed for the laboratories, new vaccines and antiviral agents.



Outbreak recognition and investigations using molecular typing

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Hospitalized patients are often exposed to infections; also, hospital environments contribute to resistance against anti-microbial factors. Nosocomial infections from resistant pathogens also complicate the situation. Prevention of nosocomial infections is considered as an essential part of regulatory system in the infection control program, and the only way to minimize mortality rate as well. One method suggested is the use of typing methods in order to find the relationship between infective sources and patients as well as the route to transmit infection. Ideal typing methods need to be simple, quick, sensitive and of high discriminating power. Traditional typing methods, on the other hand, have been used for years and are based on bacteria phenotype such as serotype, biotype, phage type or Antibigram. However, new methods investigating the relationship of isolates dependence in molecular levels have revolutionized our ability to distinguish between bacteria types and subtypes. These methods are beneficial in assessing endemic infections and prevalence of hospital diseases. Some of these methods may be listed as follows: Plasmid profile, genomic restriction fragment length polymorphism analyses, single chromosomal gene polymorphism by DNA hybridization or by PCR amplification, ribotyping, and genomic fingerprinting generated by repetitive element sequence-based polymerase chain reaction and whole genome sequencing. In addition, developing molecular procedures has provided new instruments for supervising the development and diagnosis of diseases, which altogether has led to an optimized administration of infection control programs.

Keywords:

molecular typing, nosocomial infection, outbreak

The burden of health care-associated infection (HAI) in developed and developing countries

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Health care-associated infection (HAI) referred to as "nosocomial" or "hospital" infection that occurring in a patient during the process of care in a health care facility.

This article is mainly, summary of “ Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level” (WHO – 2016).

In 2011, WHO reported that:

- 1- on average at any given time 7% of patients in developed and 10% in developing countries will acquire at least one HAI;
- 2- death from HAI occurs in about 10% of affected patients;
- 3- European estimates showed that more than 4 million patients are affected by approximately 4.5 million episodes of HAI annually, leading to 16 million extra days of hospital stay, 37 000 attributable deaths and contributing to an additional 110 000;
- 4- in the United States of America (USA), it was estimated that around 1.7 million patients are affected by HAI each year, representing a prevalence of 4.5% and accounting for 99 000 deaths.
- 5- in one prevalence surveys recently carried out in single hospitals in Albania, Morocco, Tunisia, and the United Republic of Tanzania, HAI prevalence rates were 19.1%, 17.8%, 17.9%, and 14.8%, respectively.

HAI in NICU :In a systematic review of the literature, neonatal infections were reported to be 3–20 times higher among hospital-born babies in developing than in developed countries. In another report the prevalence of healthcare-associated infections was 7.32%.

Economic burden of HAI: According to CDC, the overall, annual, direct medical costs of HAI to hospitals in the USA ranges from US\$ 35.7 to US\$ 45 billion , while the annual economic impact in Europe is as high as €7 billion .

Conclusion: HAIs incur a massive additional financial burden for health systems and leads to excess deaths.

Key words: healthcare-associated infections (HAI), neonatal intensive care unit, burden of disease



The Rational Use of Antibiotics in Children with Urinary Tract Infection (New challenges in UTI diagnostic criteria)

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Urinary tract infection (UTI) is one of the most common serious bacterial infections among children. Gram-negative bacteria and at the top of them *Escherichia coli* are the most important cause of urinary tract infection so that about 85% of the urinary tract infection in girls is due to uropathogenic *Escherichia coli*. Urinary tract infections in infants and young children are of particular importance because in this age group, fever may be the only obvious clinical finding of disease.

In this age group delay in the diagnosis and treatment of urinary tract infection may lead to kidney damage and scar. Since 1956 urine specimens containing $>100\ 000$ CFU/mL was indicative of UTI. In 2011 colony count criteria was decreased to $\geq 50\ 000$ CFU/mL by the American Academy of Pediatrics (AAP) for infants and children 2 months to 2 years of age and again reaffirmed in 2016. Precision of these criteria in children under two months and children over two years are controversial.

There are also various opinions on the accuracy of urinalysis in the diagnosis of UTI, according to last AAP guideline the finding of inflammation on U/A such as pyuria, nitrite or leukocyte esterase is necessary component for UTI diagnosis.

There are many different guidelines for urinary tract imaging after UTI which are completely different (AAP, NICE etc). Therefore, it is necessary to select the appropriate protocol for our circumstances.

Finally catheter-associated urinary tract infection (CA-UTI) is the most common health care-associated infection and it is necessary to clarify the criteria for diagnosis of CA-UTI and their differences with the criteria for diagnosis of non catheter related UTI.

Keywords:

Urinary tract infection, children, guideline



Respiratory precaution in waiting rooms

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Infection control in waiting room is very important. Influenza viruses, including H1N1 are spread by coughing or sneezing, or touching infected surfaces to others. For preventing the spread of respiratory viruses, infection control practices are important in group settings like waiting rooms. The closeness of individuals (sick and those without transmissible disease) in waiting rooms makes it easy for the virus to spread. It is extremely important in preventing the spread of respiratory viruses by using a 70-90% alcohol-based hand rub or washing hands with liquid soap and water. These supplies should be accessible: alcohol-based handrub dispensers should be on the wall or a stand at the entrance to the office or waiting room for client use. An alcohol-based hand rub should be available at the receptionist's desk. Washroom facilities should be stocked with liquid soap, warm running water, paper towels or a hot air dryer at all times. Hand hygiene signs and posters should be installed in the waiting room and washroom. For cough etiquette ensure that tissues and waste baskets are available throughout the waiting room and respiratory hygiene and cough etiquette signs are installed in the waiting area. Limiting interaction between people who are ill and people who are well is thought to play a role in reducing the spread of illness in group settings. It is important that surfaces in the waiting room be easily cleanable, and non-absorbent and be cleaned and disinfected daily esp. at the end of each day. If using disinfectant on surfaces that come into contact with food or items that could be put in the mouth, like toys rinse them with clean water. Toys and items such as magazines can also be reservoirs for the influenza virus. As magazines and unwashable toys cannot be properly cleaned and disinfected, they should be removed in waiting rooms. Toys should be non-absorbent and easily cleanable. Plush and cloth toys are not recommended. They should be cleaned and disinfected at the end of each day. Where possible: post signs asking people with influenza-like illness (fever with cough) to inform the reception, provide a surgical mask to people with symptoms, separate reception staff from clients by a minimum of two meters or behind a physical barrier like plexiglas, separate people who display influenza-like illness by at least 2 meters from others in the waiting room and if possible have a separate waiting area for those who are ill.

Keywords:

Waiting room, influenza-like illness, infection control



Incidence and associated factors of Superficial and Deep Post-CABG sternal infection in Mashhad

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ARTICLE INFO

Keywords:

Coronary Artery Bypass Graft (CABG)
sternal infection
incidence
risk factors

ABSTRACT

Introduction: The aim of this study was investigation of incidence and associated factors of sternal infection after coronary artery bypass graft (CABG) in Mashhad.

Materials and Methods: This retrospective cohort study conducted from September 2012 to September 2016 among 2073 individuals who had undergone CABG at Imam Reza Hospital, Mashhad. Incidence and potential factors associated to superficial and deep sternal infection was examined by SPSS version 16.

Results: In one percent (21/2073) of patients, superficial sternal infection was occurred. Only three patients (0.1%) suffered from deep sternum infection. The mean age of study population was 60.24 ± 10.57 years. Age and vascular risk factors were not significantly different between patients with or without superficial sternal infection. Patients with superficial sternal infection had higher hospital stay compared to patients without superficial sternal infection (12.3 ± 8.5 vs. 8.08 ± 5.6 , $p=0.03$).

Conclusion: Hospital stay time was significantly associated to superficial sternal infection.



Compliance rate of hand hygiene in health care workers of Imam Reza hospital, years 1394 - 96

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ARTICLE INFO

Keywords:

Hand hygiene
compliance rate
Health care worker

ABSTRACT

Introduction: Hand hygiene (HH) is the most important factor in preventing health care-associated infections (HAIs). Adherence to hand hygiene principles reduce the costs of hospitalization and antibiotics consumption.

Materials and Methods: This study is a descriptive analytic hand hygiene monitoring conducted in Imam Reza hospital (a big hospital with more than 1200 beds) during years 1394 to 1396 in Mashhad, Iran. Observation was done by infection prevention staff with check lists of Ministry of Health. These check lists were prepared on the basis of WHO hand hygiene guideline.

Results: According to three-year data, hand hygiene compliance rate was 34% in 1394, 35% in 1395 and 35% in 1396. The highest rate of hand hygiene compliance was in the intensive care units (52%) and lowest in emergency department (22.64%). Among medical groups, nurses 47.85% followed by physicians 38.94 % had more adherences to hand hygiene.

Conclusion: There were less increment in hand hygiene compliance rate during three consecutive years. The most important reasons were recruitment of new health care workers, frequent changing of health care workers between hospitals and finally dedicating low budgets for buying handrubs.



Study of Drug-Resistant *Acinetobacter baumannii* in Kermanshah Province, West of Iran

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ARTICLE INFO

Keywords:

Acinetobacter baumannii
MDR-AB
XDR-AB
PCR
pgaD
abaI

ABSTRACT

Introduction: *Acinetobacter baumannii* is opportunistic and is an agent of nosocomial infections particularly in intensive care units (ICUs) and burn units. Multidrug resistant and extensively drug resistant *A. baumannii* (MDR-AB, and XDR-AB) have emerged as a critical problem worldwide and have been increasingly reported. The potential of *Acinetobacter* to form biofilm may explain its exceptional antibiotic resistance and survival in the hospital environment.

The aims of this study were the assessment of antibiotic resistance pattern and the prevalence of *pgaD* and *abaI* genes in *A. baumannii* obtained from Kermanshah.

Materials and Methods: Fifty *A. baumannii* isolates were collected from Kermanshah hospitals during April 2016-to September 2017 and were confirmed by API-20E system. Then antibiotic susceptibility test for 14 antibiotic performed via disk diffusion method and Minimum Inhibitory Concentrations (MICs) were carried out by using microplate method for imipenem. Also by using PCR, *pgaD* and *abaI* genes were investigated.

Results: Bacteria were from burn wound and the samples were collected from ICU and burn ward of Imam Reza and Imam Khomeini hospitals in Kermanshah. A total at 50 *A. baumannii* isolates were highly resistant to erythromycin, ofloxacin, ceftazidime, tobramycin, ticarcillin-clavulanate, ceftriaxone and azithromycin (>70%) and cefepime, piperacillin-tazobactam, ampicillin/sulbactam and amikacin (>50%) and susceptible to colistin and tigecycline.

Eighty-four percent of isolates were resistant to imipenem. MDR-AB and XDR-AB frequency were 84% and 48% respectively. There were *abaI* and *pgaD* 18% and 58% isolates respectively.

Conclusion: High prevalence of MDR-AB isolates in Kermanshah region represents the spread of resistant genes among bacteria. The rate of antibiotic resistance among *A. baumannii* isolates from hospitalized patients of burn ward and ICU in Kermanshah is alarming and if it is not appropriately controlled, can cause severe problems in the future



The role of Infection Control in Resistive Economy

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Resistive Economy is the most important issue in the management of a country for exiting of the pressures. In health compass, resistive economy needs special consideration. Healthcare associated infections (HAIs) have a major impact on economic burden of all countries. Only in the United States the overall direct cost of HAIs to hospitals ranges from US\$28 billion to 45 billion annually. Increasing antimicrobial resistance and appearance of multidrug resistant organisms have irreparable damage to health economy. Infection control is a way for reducing economic burden of these infections. On the other hand healthy human is able to have an irrefutable role in upgrading resistive economy in health domain. Supporting of infection control in hospitals and community can guarantee human health, constant development and resistive economy in Iran.

Keywords:

Resistive Economy, HAIs, infection control



Antifungal effect of *Lactobacillus acidophilus* as a probiotic strain on *Candida Albicans* strains

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ARTICLE INFO

Keywords:

Antifungal effect

Candida albicans

Probiotics

Lactobacillus acidophilus

ABSTRACT

Introduction: Oral Candidiasis is caused by the opportunistic pathogen called *Candida albicans*. Therefore, it seems essential to prevent and treat oral candidiasis infections. As resistance to antifungal drugs increases, using probiotics as a useful alternative, can be considered to eliminate pathogenic fungus in oral cavity. So, the aim of this study was to examine the antifungal effect of *Lactobacillus acidophilus* as a probiotic organism on oral candidiasis.

Materials and Methods: Sampling was carried out from the tongue posterior by swabs and transmitted to the laboratory using Sabouraud dextrose broth. Isolation and purification of *Candida albicans* species were carried out by streak plate method in *Candida* Chrome agar. Then, to confirm the diagnosis of *Candida albicans* strains, tests like germ tube formation and chlamydoconidia generation were performed. Then, antifungal effect of *Lactobacillus acidophilus* examined through plate well diffusion and agar diffusion methods as well.

Results: Based on the results, 90% of *Candida* isolates were *Candida albicans* and 10% of the remaining belongs to other *Candida* species. In the method of agar diffusion and also plate well diffusion, 10 mm non-growth halo diameter was measured and the difference was statistically non-significant with the diameter of halo resulting from the standard strain of *Candida albicans* ATCC1023.

Conclusion: This study showed that *Lactobacillus acidophilus* as a probiotic has a growth inhibitory effect on *Candida albicans*, so it can use as prophylactic and therapy against candidiasis.



Optimal hand washing technique to minimize bacterial contamination before neuraxial anesthesia: a randomized control trial

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ARTICLE INFO

Keywords:

Alcohol gel

Bacterial colonization

Handwashing

ABSTRACT

Introduction: Infectious complications related to neuraxial anesthesia may result in adverse outcomes. There are no best practice guidelines regarding hand-sanitizing measures specifically for these procedures. The objective of this study was to compare the growth of microbial organisms on the operator's forearm between five common techniques of hand washing for labor epidurals.

Materials and Methods: this single blind randomized controlled trial, all anesthesiologists performing labor epidurals in a tertiary care hospital were randomized into five study groups: hand washing with alcohol gel only up to elbows (Group A); hand washing with soap up to elbows, sterile towel to dry, followed by alcohol gel (Group B); hand washing with soap up to elbows, non-sterile towel to dry, followed by alcohol gel (Group C); hand washing with soap up to elbows, non-sterile towel to dry (Group D) or hand washing with soap up to elbows, sterile towel to dry (Group E). The number of colonies for each specimen/rate per 100 specimens on one or both arms per group was measured .

Results: The incidence of colonization was 2.7, 26.0, 19.3, 115.2, and 54.0 in Groups A, B, C, D and E, respectively. Compared to Group A, the odds ratio of bacterial growth for Group B was 1.55 (P=0.513), Group C 5.39 (P=0.004), Group D 13.91 (P<0.001), and Group E 8.84 (P<0.001).

Conclusion: Alcohol-based antiseptic solutions are superior in terms of reducing the incidence of colonization. The results will enable us to develop guidelines to standardize and improve hand-sanitizing practices among epidural practitioners.



The Interaction between Nutrition and Infection

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The relationship between nutritional status and the immune system has been a subject of study for much of the 20th century. Dramatic increases in our understanding of the association between the immune system and the factors that regulate immune function have established a significant and close concordance between host nutritional status and immunity.

Today, recognition of the synergistic relationship between nutrition and infection influences most public health interventions to prevent malnutrition.

Malnutrition is the primary cause of immunodeficiency worldwide, and we are learning more and more about the pathogenesis of this interaction. Five infectious diseases account for more than one-half of all deaths in children aged 5 years, most of whom are undernourished. Micronutrient deficiencies have effects such as poor weight gain, impaired intellectual function, and increased susceptibility to infection and mortality. The worldwide importance of parasite infection is enormous. It is understood that parasites may lead to malnutrition, but the extent to which malnutrition causes increased parasite infestation is not known; thus, the conditions need to be addressed together. Nutritional deficiencies associated with pregnancy are associated with poor immune response to infection. Because this immune deficiency is partially compensated by breast-feeding, this is the single best way to protect infants from infection. The 21st century provides new information and new challenges. With new technologies and political changes, it is hoped that a healthier, more disease-free, and better-nourished population will emerge.

The cyclical relationship between poor nutrition, increased susceptibility to infectious diseases, leading to immunological dysfunction and metabolic responses that further alter nutritional status will describe and, wherever possible, related to physiological mechanisms.

Keywords: Nutrition, Infection



A Fluconazole delivery system based on Chitosan (Cs) and Polyvinyl Alcohol (PVA) Blend Films against *Candida albicans*

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ARTICLE INFO	ABSTRACT
<p>Keywords: Drug delivery Wound dressing Chitosan Polyvinyl alcohol Candidiasis</p>	<p>Introduction: : Polymeric delivery systems can improve the pharmacokinetics of a drug, which may lead to reduction of the side effects and increase efficacy. The aim of study was to prepare a new wound dressing to healing Cutaneous Mycosis using a blend of chitosan (Cs), polyvinyl alcohol (PVA) and Fluconazole (Flu) as a drug delivery system .</p> <p>Materials and Methods: Films were prepared using solvent casting method. X-ray diffraction (XRD), water vapor transmission rate and swelling assay methods were used while the sustain release was examined interally. The antifungal activity examined using Pour plate methods. Finally the cytocompatibility of composite films was confirmed by MTT assay.</p> <p>Results: According to the X-ray diffraction graph pure Cs showed an amorph structure while pure PVA revealed crystalline appearance with unique pick. The more increasing of Cs ratios, the less crystalline structures appeared. Gravimetric method for water vapor transmission rate showed all films have a similar performance ($P>0.05$). Swelling assay after 10 min demonstrated the films with high ratios of chitosan have a significant increase in the swelling degree ($P<0.05$). Sustain release profile showed that composite films exhibit a better controlled release than pure Cs and PVA films. The Cs/PVA composite films represented a safe performance in MTT assay ($p<0.05$). Pure Cs/Flu film has the most inhibition zone in antifungal activity test against <i>Candida albicans</i>.</p> <p>Conclusion: the study showed composite films has better control release than unique films, also potentially able to use as a trans-dermal delivery to keep drug dose in therapeutic window.</p>



Best practice of Implementation of the WHO Multimodal Hand Hygiene Improvement Strategy in Aalinasab Hospital

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ARTICLE INFO

Keywords:

World Health Organization Framework
Multimodal Hand Hygiene Strategy
Health Care
Associated Infection

ABSTRACT

Introduction: The world health organization (WHO) introduced the “hand hygiene self-assessment framework” (HHSAF) to evaluate the level of the application of the multimodal hand hygiene improvement strategy (MHHIS), which defines preventive interventions, standards, and tools conceived to improve hand hygiene in healthcare facilities. the aim of our study was to evaluate the implementation of the MHHIS in aalinasab hospital in 2011-2017 using the HHSAF document.

Materials and Methods: Our surveillance was performed through collection and analysis of the HHSAF data between 2011-2017 recorded in hospital . The HHSAF describes the hand hygiene level evaluating the following 5 parameters: system changes, education/staff training, evaluation and feedback, reminders in the workplace, and promotion of an institutional safety climate And is a validated tool for evaluation of hand hygiene infrastructure, promotional activities, performance monitoring and feedback, and institutional commitment in health-care facilities. The Framework consists of 27 indicators weighted and grouped into 5 components of 100 points each, and summed as a total score of 500.

Results: This hospital involved in the study achieved the intermediate hand hygiene level, (74%). total score was 370. component scores were system changes(%80.9), education/staff training(%100), evaluation and feedback(%55), reminders in the workplace(%100), and promotion of an institutional safety climate(%40) uniformly high for system change and education/staff training and lowest for institutional safety climate and evaluation and feedback . details and innovations of all of the tools supplied to support successful implementation of a hand hygiene improvement strategy at this facility are provided in this article.

Conclusion: This hospital report intermediate levels of hand hygiene promotion. in full text best practice of multimodal hand hygiene improvement strategy in aalinasab hospital will present .



The Study level of Hand Hygiene and its barriers at the Personnel of Ali Ebne Abitaleb Hospital in Zahedan City in 2017

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ARTICLE INFO

Keywords:

Hand washing
cure personnel
Zahedan Ali Ebne Abitaleb
Hospital

ABSTRACT

Introduction: Hygiene caregivers, including nurses, are one of the important factors in the transmission of microorganisms and nosocomial infections. The aim of this study was to evaluate the level of hand hygiene and its management in the personnel of Ali ebne Abitaleb Hospital, Zahedan, in 2017.

Materials and Methods: this study is a descriptive, cross-sectional study. this study has been conducted on 100 cure personnel. Data gathered using by questioner. The data collected using the methods of descriptive statistics in software SPSS 22 was analysis.

Results: The results showed that the mean age of the subjects was 34.2 ± 5.7 years. The majorities of them (51%) were female and nurses (83%). The average number of hand washing during a shift of work was 9.9 ± 1.3 . The most common cases of hand washing were after exposure to the blood and the patient (95%) and the least was washed hands (33%) after contact with the surroundings area of the patient. Most of them (93%) believed that they were less than the recommended rates of their hands. The most important barriers to washing hands were lack of time and Too much work and lack of clean and suitable sink (38%), using gloves and lack of soap and towels paper (26%).

Conclusion: According to the results of this study, the level of hand washing was not optimal. Therefore, the necessity of research to increase awareness and improve the performance of cure personnel about hand hygiene is emphasized.



Evaluating the hand hygiene compliance of Ayatollah Rouhani Hospital in Babol during 2016-2017

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ARTICLE INFO

Keywords:

Hand hygiene compliance
Medical staff
Hospital

ABSTRACT

Introduction: One of the most important ways of transmitting nosocomial infections is indirect release of pathogens into the patient's body via hands of medical staff. The aim of this study was to evaluate hand hygiene compliance of medical staff at Ayatollah Rouhani Hospital in Babol during 2016-2017.

Materials and Methods: This descriptive study was conducted through observation method using checklists designed by Health Ministry and the results were audited using SPSS 20. Audit of the medical staff included: physicians, nurses, practical nurse assistants and auxiliary staff. Of the total 7854 hand hygiene opportunities, handwashing and handrubbing (HW&HR) was 827 (10.52%) in physicians, 1726 (22%) in nurses, 479 (6.09%) in practical nurse assistants and 583 (7.42%) in auxiliary staff, respectively.

In terms of units, the NICU 360 out of 406 opportunities had the highest hand hygiene compliance (88.6%), followed by endocrine unit with 208 out of 270 opportunities (77%) and the lowest hand hygiene compliance was associated with the endoscopy unit with 67 out of 285 opportunities (23.5%). Results showed that there was a significant relationship between job and unit ($P \leq 0.05$) and between action (HW&HR&gloves) and unit ($P < 0.05$), too.

Results: The highest and lowest hand hygiene compliance levels were observed in nurses and workers among the occupational groups, and in NICU and endoscopy unit among units, respectively.

Conclusion: Face-to-face training program, posters, enhancement of facilities (installation of dispensaries, wipes and so on) in the wards and units of the hospital, pamphlets and educational clips are recommended to use for promotion of the hygiene compliance culture.



A study of hand hygiene compliance and its effective factor in Rajaee Cardiovascular Medical and Research Center

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ARTICLE INFO

ABSTRACT

Keywords:

Hands hygiene
health care worker

Introduction: Hands which known to be or suspected of being contaminated are cause of health care associated infection, and hands hygiene is the first step recommended for infection control. This study was conducted to evaluate compliance of hand hygiene among nurses, physicians, physiotherapist, laboratory personnel, and Nurse's aide in Rajaie Cardiovascular Medical and Research center in Iran.

Materials and Methods: A valid questionnaire was used to evaluate hand hygiene compliance based on World Health Organization's concept of "Five Moments for Hand Hygiene" and effective factors such as sink, soap, alcohol base hand rub, posters, in hospital staff ,Hands hygiene behavior was unobviously monitored in 10312 hand sanitizing situations among hospital wards, and their behavioral status as well as five moments and the performed procedure were recorded in a checklist designed based on WHO.

Results: The health care workers attempted to sanitize their hands was observed only in 2550 positions (24.4 percent). The compliance rates in nurses group were 32.2. %, nurse Aimerd 19.6% , physicians 22.8%; laboratory workers 14.6% and physiotherapist 27.6%.

The compliance rates in critical wards were 30% and in noncritical wards were 15.6% and 3 Moments of indications of hand hygiene was done the most in HCW.

Conclusion: The study findings indicated that the percentage of situations which health care workers attempted to sanitize their hands were less than expected.



In vitro activities of eight systemically active antifungal agents against a national collection of *Candida parapsilosis* complex isolates

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ARTICLE INFO	ABSTRACT
<p>Keywords: <i>C. parapsilosis</i> complex Antifungal susceptibility Iran</p>	<p>Introduction: <i>Candida parapsilosis</i> is one of the common non-albicans <i>Candida</i> species, which is generally isolated from the bloodstream infections in the immunocompromised individuals. However, there is no systematic study investigating the antifungal susceptibility profile of <i>C. parapsilosis</i> complex species in Iran.</p> <p>Materials and Methods: The collection consisted of 87 clinical strains of <i>C. parapsilosis</i> complex isolates obtained from a variety of specimens, including nail (n=63), skin lesions (n=12), groin (n=6), ear swabs (n=2) blood (n=2), vaginal discharge (n=1), and sputum (n=1). The strains identified by matrix-assisted laser desorption ionization-time of flight mass spectrometry-based assay. According to recommendations stated in the Clinical and Laboratory Standards Institute (CLSI) M27-A3 and M27-S4 document, minimum inhibitory concentration (MICs) was determined.</p> <p>Results: Fluconazole showed the widest MICs range (0.25-8 µg/mL) and highest MIC₉₀ (2 µg/mL) value against all <i>C. parapsilosis</i> species complex. All strains had low MICs for posaconazole, voriconazole, and itraconazole, followed by micafungin, anidulafungin, and caspofungin as compared with other drugs. Fluconazole and amphotericin B were the less active drugs.</p> <p>Conclusion: The clinical effectiveness of these medications in the treatment of <i>C. parapsilosis</i> complex infection should be determined in the future studies.</p>



Hand Hygiene Compliance Level at Educational Hospital Wards of Mazandaran Heart Center- 2017

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ARTICLE INFO	ABSTRACT
<p>Keywords: hand hygiene medical personnel Mazandaran Heart Center</p>	<p>Introduction: The importance behind the transmission of nosocomial infections is vividly known and through washing hands correctly, the risk behind the infection transmission is minimized .Natural human skin got colonized by bacteria .Since complying hand hygiene is the first known method to reduce the infection transmission, the current research targets to analyze hand hygiene compliance.</p> <p>Materials and Methods: This study is descriptive of clinical survey in order to asses hand hygiene compliance on the medical personnel of Mazandaran heart center wards within the first six months of the year 2017.For this end, the standard checklist of 5 requirements was used .Then the findings were analyzed using descriptive statistics of WHO on hand hygiene .</p> <p>Results: Based on the achieved results, the general hand hygiene compliance in the wards was 45.1% as the following compared with the indication. Before contact with the patient, it was 13.2%, before aseptic service provision 16.53%, after contaminated with the patients' blood and secretions 80.41%, after contact with the patient, it was 61.3% and after contact with the patient's surrounding environment 54.3%, hand hygiene compliance in the requirement known as after contact with the patient was the highest level and in the position before contact with the patient as the lowest level.</p> <p>Conclusion: In this research, hand hygiene compliance level is less than 50 % (45.1%).As the results indicate, hand hygiene compliance by the wards medical personnel after contact with the patient's blood discharge contaminations was more than that of other requirements. While in order to prevent the transmission of contamination and to promote the safety of the patients and personnel, it is imperative to observe full-scale hand hygiene and via repeated scanning, monitoring and periodic health survey, the compliance level and the importance of hand hygiene in health care centers upgrades.</p>



The sensitivity of *Candida* species to antifungals isolated from educational hospitals

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ARTICLE INFO

Keywords:

Candida species
Antifungals susceptibility
Hospital environment

ABSTRACT

Introduction: During last decades, nosocomial infections due to saprophytic fungi in hospitalized patients has increased to 6 - >10%. The increased use of antifungals, prolonged prophylaxis and some genetic factors have led to antifungal resistances. *Candida glabrata* infections are difficult to treat and are often resistant to many azole antifungal agents, especially fluconazole. On the other hand, *C. krusei* is intrinsic resistance to fluconazole and reduced susceptibility to most other antifungal drugs. *Candida tropicalis* develops fluconazole resistance rapidly and the rate of resistance to fluconazole is increasing. New antifungals, caspofungin and itraconazole, have activity against fluconazole-resistant *Candida*. The aim of this study was to investigate the in vitro interaction of 6 antifungal against isolates *Candida* species of obtained from educational hospitals and detect their resistance.

Materials and Methods: In the present study 92 isolates of *Candida* species from environmental and clinical samples of education hospital were tested against several antifungals, caspofungin, fluconazole, amphotericin B, terbinafine, itraconazole and clotrimazole using microdilution method.

Results: The 38 of isolates of *C. albicans* were sensitive to fluconazole at the MIC ranges of <0.25-32 µg/ml and 5 isolates were dose depended, while 31, 30, 16 and 1 isolates were resistance to amphotericin B, terbinafine, itraconazole and caspofungin, respectively. All of *C. albicans* were sensitivity to miconazole. Only one case of *C. glabrata* were resistant to amphotericin and itraconazole. Other *Candida* species were susceptible to the antifungals, with the exception of *C. guilliermondii* and *C. rugosa* that resistant to terbinafine.

Conclusion: According to the present results, although that resistance to amphotericin B, terbinafine, and itraconazole was found among *C. albicans* and Non-albicans species, caspofungin, fluconazole and miconazole are the effective antifungals against all strains.



The Patterns of Colonization and Antifungal Susceptibility of *Candida* Isolated From Preterm Neonates in Khorramabad, South West of Iran

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ARTICLE INFO	ABSTRACT
<p>Keywords: <i>Candida albicans</i> Preterm neonates Antifungals susceptibility</p>	<p>Introduction: Usually, 7-20% of preterm neonates colonized by <i>Candida</i> species present invasive candidiasis. <i>Candida albicans</i>, and several non-albicans species cause invasive infection with <i>C. albicans</i> being the most dominant agent. In the last two decades, infection due to non-albicans have been increased dramatically due to their low sensitivity to antifungal drugs such as fluconazole. The aim of present study was to evaluate <i>Candida</i> colonization pattern and antifungal susceptibility among preterm neonates from Khorramabad. Iran.</p> <p>Materials and Methods: Samples were collected from 80 preterm neonates, cultured on CHROMagar <i>Candida</i> and incubated at 37°C. All recovered isolates were primarily screened based on classical methods and identified by PCR-RFLP targeting the ITS-rDNA regions. Antifungal susceptibility testing of all isolates was performed according to the CLSI method against amphotericin B, caspofungin, itraconazole, fluconazole and voriconazole.</p> <p>Results: Totally 23 isolates of <i>Candida</i> species were recovered from 20 patients (F:M, 50:50) including, <i>C. albicans</i> (18), <i>C. parapsilosis</i> (2) and <i>C. glabrata</i> (1). Furthermore, the blood cultures from two patients were yielded <i>C. albicans</i> and <i>C. parapsilosis</i> so that patient with <i>C. albicans</i> died after five days. Generally, in this study, 9(39.1%) isolates were resistant to amphotericin B including; 7(30.4%) <i>C. albicans</i> and 2(8.7%) <i>C. parapsilosis</i>. In addition, 2(8.7%) isolates were also resistant to itraconazole.</p> <p>Conclusion: In conclusion, <i>Candida</i> colonization among preterm neonates is still an important issue in hospitals. In addition, in spite of a significant amphotericin B resistant <i>Candida</i>, voriconazole, fluconazole, caspofungin and itraconazole are valuable antifungals, due to fully sensitivity to <i>Candida</i>.</p>



Point Prevalence Survey of Antimicrobial Consumption in Adult wards of Nemazee Teaching Hospital, Shiraz Iran

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ARTICLE INFO

Keywords:

Hospitalization

Iran

Adult

Antimicrobial Drug Resistance

ABSTRACT

Introduction: Point prevalence surveillance (PPS) of antimicrobial consumption is an effective tool to improve antibiotic prescribing in healthcare settings and combat antimicrobial resistance. We aimed to determine antibiotic prescribing quantity and quality in a tertiary teaching hospital in Iran to find priorities for areas for care improvement.

Materials and Methods: This PPS was conducted from February until May 2015 in Nemazee hospital, a tertiary teaching hospital in Iran. The survey included all inpatients receiving an antimicrobial on the day of PPS. A web-based application was used for data-entry, as designed by the University of Antwerp (www.global-pps.com). Herein, we report data regarding antimicrobial consumption in adult patients.

Results: A total number of 240 adult patients from 22 adult wards were surveyed, out of which 176 (73.3%) received at least one antibiotic during hospital stay. Highest antimicrobial prevalence rates in adult wards were medical wards 34.5% followed by intensive care units 25.5%, transplant wards 19.5%, hematology/oncology wards 8.3%, and surgical wards 2.2%. Top antibacterial subgroup was other beta lactam antibacterials 26%. Empiric prescribing was the main physician choice for prescribing (68.8%). Indication for antibiotic prescription was documented in 97.8% of cases and a stop or review date was documented for 92%. Indications of prescriptions were 40.8% for hospital-acquired infection, 34% for medical prophylaxis, 18% for community-acquired infection and 7.1% for surgical prophylactic prescribing.

Conclusion: The rates of antibiotic prescribing, and prescribing antibiotics empirically and for hospital-acquired infections were high in our center and are the important areas for care improvement.



Synthesis and evaluation of colistin-molecular sieves combinations with the goal of reducing bacterial resistance

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ARTICLE INFO	ABSTRACT
<p>Keywords: Colistin Zeolite Y <i>Acinetobacter baumannii</i></p>	<p>Introduction: Today treatment of MDR-gram- bacteria is an emergence. Consequently, there is an urgent need to find methods for reducing the antimicrobial resistance problem. Colistin is a polymyxin antibiotic with significant nephrotoxicity and neurotoxicity was discovered in the late 1940s for the treatment of gram- infections. Recently it is used to treatment of MDR organisms such as <i>Acinetobacter baumannii</i>, Unfortunately, resistance to colistin has been documented among this organism and further research is needed to solve the problem. In this study colistin was incorporated into zeolite with the goal of overcoming resistance and reducing toxicity.</p> <p>Materials and Methods: Incorporation of colistin into the zeolite y: 1) Exchange of Zn²⁺ with Na⁺ in zeolite. 2) Addition of colistin with specific concentration into zeolite Y solution. 3) Determination of new product concentration. 2- evaluation of susceptibility of colistin resistant <i>Acinetobacter baumannii</i> with determining MIC.</p> <p>Results: IR, FT-IR and UV visible spectrums of the new compound is approved. MIC of new compound was about 2.</p> <p>Conclusion: The antimicrobial effects of zeolites are well known. Metal-exchanged zeolites have been proposed in the last decade for controlled release of agents against microbial pollution. In this study colistin as an antibacterial agent, was incorporated into zeolite Y in order to increase efficacy and conquer bacterial resistance. Because of this property of zeolite the dosage of colistin (a potential toxic agent) was reduced. The new compound (colistin-zeolite Y) had an adequate MIC in compared with MIC of colistin alone against colistin resistant <i>Acinetobacter baumannii</i>.</p>



Surgical site infection in general surgery: bacterial profile and antibiotic susceptibility

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ARTICLE INFO	ABSTRACT
<p>Keywords: Surgical site infection bacterial profile <i>Escherichia coli</i> <i>Acinetobacter baumannii</i> <i>Enterobacter spp.</i></p>	<p>Introduction: Surgical site infections (SSIs) are among the most problematic nosocomial infections which besides prolonged hospital stay and excess treatment cost, can end to considerable morbidity and mortality .</p> <p>Materials and Methods: All patients with clinical diagnosis of SSI in general surgery ward of Imam Reza Hospital in years 2016 and 2017 were included in this cross-sectional study. Demographic data were extracted from hospital information system and results of cultures and antibiotic susceptibility analyzed by SPSS version 24.</p> <p>Results: Totally 276 patients were diagnosed with SSI. Mean of hospital stay was 11.27±11.85. There was 13 deaths (mortality rate: 4.71%). Most of primary procedures (71.9%) were in class II (clean/contaminated) or class III (contaminated) groups. Wound or collection discharges culture and antibiotic susceptibility were performed for 116 patients. Negative cultures (35) excluded from study. The most common cultured pathogens were <i>Escherichia coli</i> (32, 39.50%), <i>Acinetobacter baumannii</i> (14, 17.27%), and <i>Enterobacter spp.</i> (9, 11.11%) respectively. <i>Escherichia coli</i> was completely sensitive to carbapenems, highly sensitive to aminoglycosides (75%) and partially sensitive to quinolones (61%), and highly resistant to ceftriaxone (73%). <i>Acinetobacter</i> were completely resistant to carbapenems, quinolones, ceftriaxon, and cefepime, highly resistant to aminoglycosides (83%), and completely sensitive to colistin. <i>Enterobacter spp.</i> were highly sensitive to carbapenems (85%), and quinolones (89%), and partially sensitive to aminoglycosides (71%), cefepime (71%) and ceftriaxone (50%).</p> <p>Conclusion: Gram negative bacteria were the most common bacteria isolated from SSIs. Among them <i>acinetobacter</i> was completely or highly resistant to all antibiotics except colistin. It must be considered in empirical therapy of SSIs.</p>



HCV Contamination of Medicine Instruments in Surgery Department

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ARTICLE INFO	ABSTRACT
<p>Keywords: Hepatitis C Virus medicine instruments contamination surgery department</p>	<p>Introduction: Increase in occurrence of Hepatitis C Virus (HCV) among the medicine staffs and 3% prevalence of this infection in world and 0.5% prevalence in Iran and existence of the HCV-Ag positive individuals without any special symptom lead to general consideration about transmission of this infection by medicine instruments.</p> <p>Materials and Methods: The purpose of this study was evaluation of HCV contamination in surfaces (such as cabinet & door handles, telephones, water valves and electrical buttons,...) and equipments in the surgery department of the 5 selective hospitals on 2017. Sampling was performed with sterile cotton swabs in transport medium (BSAS: Bovine Serum Albumin in Sodium chloride). Samples were tested by PCR technique.</p> <p>Results: As results, 36.7.3% (22 out of 60 samples) of surfaces and 21.9% (23 out of 105 samples) of equipments were contaminated before disinfection. 11.43% (4 out of 35 contaminated samples) of equipments remained contaminated after disinfections.</p> <p>Conclusion: There is high contamination percentage in the surfaces that expresses the necessity of effective and regulatory disinfection procedures in these sites. According to the high level of infection in the surfaces and equipments in the surgery department, these approaches to disinfect equipments are not sufficient to omit HCV infection.</p>



Proven central line infection in children with immune deficiency post-haematopoietic stem cell transplant, thymus transplant and gene therapy

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ARTICLE INFO

Keywords:

Primary Immune Deficiency
febrile neutropenia
line infection

ABSTRACT

Introduction: Children with Primary Immune Deficiency (PID) are at risk of recurrent infections. The risk may increase with immunosuppressive drugs, neutropenia or presence of central venous line.

Materials and Methods: Children with PID who were admitted to Great Ormond Street Hospital for haematopoietic Stem Cell Transplant (HSCT), Thymus Transplant (TT) or Gene therapy (GT) with central lines inserted in 2017 were included. The data was extracted from hospital database and discharge summaries.

Results: 32 children with PID were admitted. 16 patients were under 2, 10 patients between 2-5 and 6 patients between 5-16 years of age. The diagnoses included 10 with Severe Combined Immune Deficiency, 5 with Chronic Granulomatous Diseases, 5 with absent thymus and 4 with Wiskott Aldrich Syndrome. All patients received conditioning before procedures. 22 patients received allogeneic HSCT, 5 TT and 5 GT. The source of stem cells were bone marrow in 13 and peripheral stem cell in 9 patients who received HSCT. 22 patients had episodes of febrile neutropenia and all received broad spectrum antibiotics based on local guideline but only 4 patients (12%) had positive blood culture. 60% of patients received TPN. Only one patient required line removal due to *Candida* infection. 7 patients with fever had viral reactivation and one had positive galactomannan on BAL and x-ray changes suggestive of fungal chest infection. The overall survival was 96.8%.

Conclusion: Line infection should always be considered as one of the causes of fever. Accessing the line in sterile condition will reduce the risk of infection.



Effect of training on proper antibiotic prophylaxis before surgery in Payambar Aazam Hospital, Kerman, 2017

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ARTICLE INFO

Keywords:
Prophylaxis antibiotic surgery

ABSTRACT

Introduction: The effective factors in reducing the incidence of surgical infections are proper administration of prophylaxis antibiotics before surgery. Correct administration of antibiotics results in numerous complications such as loss of natural flora, resistance to microorganisms, drug poisoning, illness, mortality, infection and unnecessary costs. The purpose of the study was to evaluate the effect of prophylactic antibiotic protocol training on the compliance rate of prescribing.

Materials and Methods: In this study, the patients' records were compared for the indication of use, type, dosage and routes of administration of antibiotics with the local administration of 2017. Formulate relevant instructions, hold a training session with doctors and give directions to surgeons. Data were analyzed using SPSS16 software and Chi-square test.

Results: Observation of indications before and after intervention was 74% and 91% respectively, antibiotic administration before and after intervention was 70% and 88% respectively, the correct dosage of the drug before and after the intervention was 80% and 93% of the patients respectively. Consumption before and after intervention for all patients was correct. Statistical tests showed a significant relationship between the indication of use, type of drug and antibiotic dose before and after the intervention (P value <0/05).

Conclusion: Educational interventions through the provision of instructions with the participation of doctors, the establishment of a system for monitoring the implementation of the relevant procedure through periodic audits by the infection control team and providing feedback to the physician, has a very beneficial effect on the proper administration of antibiotic prophylaxis.



Evaluation of linezolid or cotrimoxazole in combination with rifampicin as alternative oral treatments based on an in vitro pharmacodynamic model of staphylococcal biofilm

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ARTICLE INFO	ABSTRACT
<p>Keywords: Foreign-body infection Rifampicin combinations Cotrimoxazole Biofilm <i>S. aureus</i></p>	<p>Introduction: Linezolid or cotrimoxazole plus rifampicin (RIF) are alternative oral treatments for staphylococcal prosthetic joint infections when fluoroquinolones are not possible to use, but there is limited evidence about its activity. We evaluated the efficacy of linezolid (LZD) and cotrimoxazole (SXT) alone and in combination with RIF against <i>Staphylococcus aureus</i> in an in vitro pharmacokinetic/pharmacodynamic biofilm model.</p> <p>Materials and Methods: Using the CDC Biofilm Reactor® system, simulated regimens of LZD (600 mg q12h), SXT (160/800 mg q8h) and levofloxacin (LVX, 750 mg/day) alone and in combination with RIF (600 mg/day) were evaluated against one MSSA and one MRSA strain. Antibiotic efficacy was evaluated by decrease in counts of planktonic bacteria from medium and biofilm-embedded bacteria from coupons over 56h. Resistant strains were screened.</p> <p>Results: In both strains, SXT alone was ineffective and LZD presented low activity, but no resistance emerged. The combinations with RIF significantly increased the anti-biofilm efficacy against MSSA ($\Delta\log$ cfu/mL 56h-0h: SXT-RIF:-2.7 and LDZ-RIF:-3.2), but RIF-resistant strains appeared with SXT-RIF. Against MRSA, LZD-RIF (-3.2) protected against the emergence of resistance and was more effective than SXT-RIF combination (-0.7, $P<0.05$), in which RIF-resistant strains were again detected. LVX-RIF combination confirmed its high efficacy against biofilm-embedded bacteria, this being the most effective therapy (-6.1, against MSSA).</p> <p>Conclusion: The emergence of RIF-resistant strains with SXT-RIF poses serious concerns for its use in clinical practice. Interestingly, LZD-RIF appears to be an appropriate alternative for prosthetic joint infection caused by LVX-resistant <i>S. aureus</i>.</p>



Which pathogen is the worst killer of burn patients?

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ARTICLE INFO	ABSTRACT
<p>Keywords: Mortality blood culture central venous catheter culture acinetobacter baumannii klebsiella pneumonia pseudomonas aeruginosa</p>	<p>Introduction: Burn patients are prone to severe infections due to loss of barrier function of skin, immunosuppression, and fertile ground of damaged tissues for bacterial growth. Some pathogens are known for their rapidly progressive and life threatening behaviors in burn patients. The aim of this study was to assess the outcome of burn patients, regarding to their blood or catheter culture results.</p> <p>Materials and Methods: The results of blood and central venous catheter cultures of all patients admitted to burn center of Imam Reza hospital during five consecutive years starting from 2012 were surveyed. Cultures with “no growth” results were excluded from the study.</p> <p>Results: Overall, 159 positive blood and central venous catheter cultures were included; out of which, 99 (62%) were correlated with death. The most prevalent pathogens were <i>acinetobacter baumannii</i> (70, 44%), <i>klebsiella pneumoniae</i> (33, 21%), and <i>pseudomonas aeruginosa</i> (21, 13%). However, the highest mortality ratio was observed in <i>Enterococcus</i> (88%), <i>Klebsiella pneumoniae</i> (79%), <i>pseudomonas aeruginosa</i> (76%), <i>Proteus mirabilis</i> (60%) and <i>acinetobacter baumannii</i> (56%).</p> <p>Conclusion: It seems that although <i>acinetobacter baumannii</i> was the most prevalent bacteria in blood and catheter cultures and the most number of deaths were associated with it, but there must be great attention paid to <i>enterococcus</i>, <i>klebsiella pneumoniae</i>, and <i>pseudomonas aeruginosa</i> because of their high mortality ratio.</p>



Swab wound culture in burn patients: How much its results are correlated to blood culture results?

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ARTICLE INFO

ABSTRACT

Keywords:

Burns
blood culture
swab wound culture
centrally inserted catheter culture

Introduction: Wound colonization and infection are common in burn patients and swab culture is commonly used for infection surveillance in burn centers. The aim of this study was to evaluate the correlation between results of swab wound culture (S.W.C) and blood or centrally inserted catheter culture (B.C/CICC) in burn patients.

Materials and Methods: This cross-sectional study was performed in burn patients hospitalized in years 2012-2016 in burn center of Imam Reza Hospital, Mashhad, Iran. All patients who had S.W.C and B.C/CICC were included in this study if the interval between them was less than 48 hours. Data were analyzed using SPSS version 24 with paired t-test.

Results: Totally, from 142 coupled S.W.C and B.C/CICC, 57 couples (40%) had positive results, 18 couples (13%) had negative results, and in 67 cases (47%) one of two cultures were negative and the other one positive (MacNemar p value<0.001, Kappa= 0.11); but when comparing result of cultures, only in 36 out of 142 couples (25.4%), the result of swab and blood or catheter cultures were identical.

Conclusion: Findings of this study showed that although the positive result of S.W.C is correlated with positive B.C/CICC, identical culture is seen only in one-fourth of cultures, and S.W.C may not be an accurate indicator of infection in burn patients.



Assessing the Problems of Hospital Infections Reporting System from the Perspective of Infection Control Team in Sanandaj City's Hospitals in 2017

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ARTICLE INFO

Keywords:
Reporting System
Hospital Infection

ABSTRACT

Introduction: More than 1.4 million people annually suffer from hospital infection in the world. It's one of the major problems of any health system, especially in developing countries. One of the most important issues about hospital infection is the lack of accurate reporting of infectious cases. This study is aimed to assess the problems of hospital infections reporting system from the perspective of infection control team in Sanandaj hospitals.

Materials and Methods.

This is a cross-sectional descriptive-analytic study. The target population were all members of Hospital Infection Control Teams of Sanandaj educational hospitals (n=56) and they were studied by census method. Data gathering tool was a three section questionnaire containing 33 questions which validity and reliability had already been confirmed. Data were analyzed by descriptive statistics using SPSS 16.

Results: According to the results, the main reasons for not reporting hospital infections are the lack of commitment of physicians to register the cases of infection, the lack of systemic prediction for interventions and the lack of follow-up system after discharge of patients undergoing surgery.

Conclusion: Given the results, it seems that the commitment of senior managers to establish a systematic reporting system for hospital infections and the commitment and participation of physicians in infection control programs can have a significant effect on reporting and controlling hospital infections.



Characterization of Ventilator- Associated Pneumonia (VAP) and bacterial resistance pattern in patients hospitalized at the intensive care unit of Shahrekord hospitals

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ARTICLE INFO

Keywords:

Ventilator-Associated Pneumonia (VAP)

Bacterial resistance pattern

Intensive Care Unit (ICU)

ABSTRACT

Introduction: ventilator associated pneumonia (VAP) is very important which can lead to increased mortality rate in the patients. The aim of this cross-sectional study was to determine the incidence of VAP and its bacterial resistance pattern at the intensive care unit (ICU) of Shahrekord hospitals.

Materials and Methods: In this study, 150 endotracheal samples obtained from the patients after 2 day of hospitalization in ICU units of Shahrekord Hospital. The samples cultured in the Microbiology Laboratory. Colony counting were determined. and antibiotic susceptibility pattern was performed by CLSI system guidelines. Data were introduced into SPSS software and analyzed by means of descriptive statistical tests.

Results: Among 150 samples from endotracheal tube of the patients, 35.2% were positive for VAP. Mean standard deviation of duration of hospitalization was 23.2 ± 10.6 days. Microorganisms isolated from endotracheal tube were essentially *Enterobacteriaceae* specially included *Klebsiella spp.*, and *Enterobacter spp.* *Acinetobacter spp.*, *Staphylococcus epidermidis*, *Pseudomonas spp* and *Staphylococcus aureus* were detected too. The maximum and minimum antibiotic resistance by gram-negative bacteria were 83.6% to cefalotin and 18% for amikacin. In addition, the most antibiotic resistance by gram-negative bacteria were 93.5% for methicillin (P = 0.001 and 0.003).

Conclusion: The VAP incidence rate of 32.2% was too significant. Clinical isolates in the present study had a high antibiotic resistance especially to the cephalosporin's.



Evaluation of Prevalence of nosocomial infections and Related factors in Beheshti hospital in Hamadan

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ARTICLE INFO	ABSTRACT
<p>Keywords: Hospital infection microbial species hospitalization</p>	<p>Introduction: Nosocomial infection are one of the problems of the past and present centuries and are cause of the urge of cost and expenditure to patients and health system. Therefore identification of incidence and related factors in hospital infections and prevention ways is especially important. The study aimed to investigate the prevalence and factors associated with nosocomial infections in the shahid Beheshti hospital in Hamadan in first six months of 1396.</p> <p>Materials and Methods: In this descriptive cross-sectional study, 249 cases of Nosocomial infections have been reported During the year Of patients admitted to the ICU, lung , endocrinology, nephrology , gastroenterology , hematology and dialysis were studied. Data was collected by check list contains information on age , sex , date of admission and discharge or death , cultures type , infection agent, diagnosis , and aggressive action. Data analysis was performed with SPSS-16.</p> <p>Results: Based on the findings of 8044 patients, 249 cases of nosocomial infections were reported, of which 55% were male and 45% were female, and the mean age was $05/19 \pm 22/64$ years and the average hospitalization time was $18/16 \pm 86/19$ days. The incidence of infection was estimated by the special software for calculating hospital infections of 3.5%. n this study, the most isolated bacteria were <i>E.coli</i>(35/5%), <i>acintobacter</i> (17/5%), <i>enterobacter</i> (15%) and <i>candida</i>(12%) respectively. The highest incidence of infection was estimated in the ICU (12/2%), kidney transplantation (7.2%), nephrology (6/1%) and general (5/1%) wards respectively. The incidence of urinary tract infections was 46% more than other infections ($p < 0/05$). Also, there was a significant correlation between age, duration of hospitalization and the incidence of hospital infection ($p < 0/05$), but there was no significant relationship between sex and hospital infection.</p> <p>Conclusion: Prevalence of nosocomial infection was less than standard level. Based on the findings, increasing the length of hospitalization and the age increases the risk of infection, which can be due to various reasons, including underlying illness (immune deficiency, diabetes, cancer, etc.), and a low percentage of hand hygiene by the staff. Therefore, observing the precautionary principle, performing an aggressive procedure only when necessary, proper hand washing, logical administration of antibiotics for prevention and control of hospital infections is recommended.</p>



Detection of Class I, II and III Integrons in *Staphylococcus lugdunensis* isolates from hospitalized patients in Shiraz Teaching Hospitals (2015-2016)

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ARTICLE INFO	ABSTRACT
<p>Keywords: <i>Staphylococcus lugdunensis</i> Integrons Shiraz Antibiotic resistance MRSL</p>	<p>Introduction: <i>Staphylococcus lugdunensis</i> is a coagulase negative <i>staphylococcus</i> species (CNS) that may cause various infections with unusual severity. In spite of the administration of various antibiotics, infections caused by these bacteria are still significant and the transmission of antibiotic resistance genes, especially by Integron structures, exacerbates this issue. The aim of this study was to investigate the antibiotic susceptibility pattern, the presence of class 1 and 2, and 3 integrons, and finally to investigate its possible association with the transfer of resistance genes in <i>S. lugdunensis</i> bacteria isolated from teaching hospitals in Shiraz.</p> <p>Materials and Methods: Sampling for this study was carried out over a period of six months from different parts of Shiraz teaching hospitals. Thirty isolates of <i>S. lugdunensis</i> were confirmed by phenotypic and then examined by PCR for presence of Integron classes I, II and II, and also the presence of eap gene for molecular confirmation of isolates species.</p> <p>Results: The overall prevalence of MRSL strains in this study was 43.2%, and the prevalence of class I, II and III integrons was 7 (23.33%) and 2 (6.66%) and 0 respectively. The association of antibiotic resistance and the presence of class I and II Integrons for 7 and 5 antibiotics in this study was reported to be significant with regard to the value of $p < .05$.</p> <p>Conclusion: The results indicate the probability of association between antibiotic resistance and the presence of the integrons, and therefore, the presence of integrons and transmitted resistance cassettes through them is important in controlling the hospital infections caused by this bacterium.</p>



The use of nanotechnology and nanoparticles for control of clinical infection

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ARTICLE INFO

Keywords:

Ag nano particles
microbial infection
antibacterial
antibiotic resistant
medical device

ABSTRACT

Introduction: Infectious diseases are the leading cause of mortality worldwide caused due to microbial infection. In addition, the rapid development of drug resistance for therapies and harmful effects of multiple therapies is a serious health concern. Concerns about the spread of bacterial genetic tolerance to antibiotics, such as that found in multiple drug-resistant *staphylococcus aureus* (MRSA) and *pseudomonas aeruginosa* have significantly increased of late. As a rapidly growing development in biomaterial design, nanomaterials (materials with at least one dimension less than 50 nm) may potentially prevent bacterial functioning that lead to infections. As a first step in this direction, Ag nanoparticles of various densities have been explored for killing bacteria. This article is based on the experiments carried-out using nanoparticle of Ag (less than 50 nm) for eliminating microorganisms such as *S.aureus* and *P. aeruginosa* with least harmful effects on living tissues or associate fluids.

Materials and Methods: Nano particles of Ag in the size range of 20-35 nm were synthesized by chemical precipitation method. Using macro dilution, nanoparticules of Ag (0.1-0.9%) were mixed in the container with 1.5 cell/ml (bacterium + nanoparticle) density of *S. aureus* (MRSA), *P.aeruginosa* and control medium and then placed in an incubator shaker with 250 rpm speed and 37°C temperature for 24h. UV-Visible spectrophotometer was used to measure OD (600 nm).

Results: 0.5% Ag particle was found to be bacteriocidal and 100 percent of bacteria were eliminated. 0.1% Ag particles was found to be bacteriostatic against *S. aureus* (MRSA) and *P.aeruginosa*.

Conclusion: Direct relationship between Nano-particles density and the amount of bacteriums eliminated has seen established in this research.



Incidence of needle stick and sharp injuries among health care workers in Iran

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ARTICLE INFO	ABSTRACT
<p>Keywords: Infection Control Needle stick and sharp injuries incidence</p>	<p>Introduction: Needle stick and sharp injuries (NSIs) are still one of the most important occupational hazards among the health care workers (HCWs). The main aim of the work presented here was to explore the incidence rate of NSIs in HCWs in 5 major hospitals affiliated to Tehran University of Medical Sciences (TUMS).</p> <p>Materials and Methods: This cross sectional, judgmental-sampled study was conducted in 5 major general hospitals affiliated to TUMS using a validated self-made questionnaire. All HCWs at risk of NSIs in different job categories who had experienced NSIs in the year of study were included to the study. The data were collected from June 2012 to June 2013.</p> <p>Results: The total number of reported NSIs was 295. The incidence rate of NSIs was 11.2% of which 39% were nurse. More than half of studied cases were less than 30 years old. The majority of cases had less than 5 years of work experience. In this study NSIs mostly had been happened in morning work shift.</p> <p>Conclusion: The lower rate of NSIs in this study compared to the other studies can be due to underreporting. Until health care workers authenticate the importance of reporting such incidents, the size of the problem cannot be truly determined.</p>



Evaluation of UV irradiation disinfecting efficacy under actual conditions in hospitals

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ARTICLE INFO

Keywords:

Ultraviolet light
Staphylococcus aureus
Escherichia coli
Bacillus subtilis spores
disinfecting efficacy

ABSTRACT

Introduction: Ultraviolet light (UV) has been used extensively for disinfection at operative rooms, clinics and etc. In hospitals most of the time, UV were generated either by the mercury 254 nm UV line or a xenon arc lamp. Our aim in this study is to determine the disinfecting efficacy of UV lamp on common microorganisms.

Materials and Methods: UV disinfecting efficacy was tested using the microbiological challenge test. The standard strains of *Escherichia coli*, *Staphylococcus aureus*, *Bacillus subtilis* spores and *Candida parapsilosis* were used. They were cultured then concentration of standard 0.5 McFarland ($\sim 1.5 \times 10^8$ CFU/ml for bacteria and 5×10^6 CFU/ml for yeast) were prepared. Then, 10-fold serial dilutions were used. Inoculated plates were placed under the UV lamp within different distance and were irradiated for different times. We have done this study with two UV lamps new (20W x 1EA, much less than 500 functional hours) and old (much more than 1000 functional hours) one.

Results: In old lamp, the disinfecting efficacy was observed only at 5 centimeter distance and 15 minutes. In this distance and time only *Bacillus subtilis* spores have been growth. But in new lamp no microorganisms had grown in this time and distance. For new lamp, the maximum efficacy was observed at 70 centimeter and 15 minutes.

Conclusion: UV radiation is effective in inactivating a wide range of microorganisms. UV irradiation plays a critical role controlling bacteria in the workplace. Clinical personals must pay more attention to this issue and the false positives of samples are avoided while working with them. .



A survey on the knowledge and attitude of health care workers in Tabriz Sina hospital about influenza vaccine

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ARTICLE INFO

Keywords:

Health care workers
influenza vaccine
Tabriz

ABSTRACT

Introduction: Health care workers are exposed to the danger of severe complications of influenza. Vaccination has known to be effective in the reduction of hospitalization and the death of the exposed groups. This study has been done with the purpose of investigating the knowledge and attitude of health care workers in Tabriz Sina hospital regarding influenza vaccine.

Materials and Methods: The present study is descriptive and uses a questionnaire composed of three parts: 4 questions regarding demographic information, 10 questions regarding attitude, and 10 questions regarding the sample's knowledge of the vaccine nature, its prescription time and the complications.

The population for the study includes health care workers (doctors and nurses). And the data have been analyzed by the SPSS software, t-test and Chi square test.

Results: Out of 117 subjects in the study, %24 was doctors and %76 was nurses. %71 of the samples reported a vaccination record this year. Knowledge of the health care workers was at a desired level and there was no significant difference in the degree of knowledge among doctors and nurses. As for attitude, %56 of the people had chronic cold in the cold seasons and had symptoms of influenza after receiving vaccine. %82 of the subjects expressed their decision for vaccination based on the kind of vaccine (the country which made the vaccine) and %86 of the subjects expressed the need for vaccination for the health care workers.

Conclusion: Having knowledge, a positive attitude and an appropriate performance in vaccination against influenza play an essential role in controlling and prevention of the spread of and in the reduction of the spread of the disease. Education which is intended for increasing the knowledge of the health care workers regarding the nature of injected vaccines (inactivity of the virus) can develop a more positive attitude towards vaccination. On time distribution of the vaccine in health care centers can also increase welcoming of vaccination.



Investigating the relationship between load and the number of particles in the air of selected sections (delivery block, operating room, CCU, ICUOH, SICU, NICU, angiography) in Razavi Hospital of Mashhad in 2015

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ARTICLE INFO	ABSTRACT
<p>Keywords: Particles Razavi Hospital Mashhad</p>	<p>Introduction: The size of the determinant particles, respiration and their location in the respiratory tract and their behavior in the air, aerodynamic diameter particles of 100-1.0 micrometers capable of entering the respiratory system and their behavior in the air. Particles with an aerodynamic diameter of less than 10 Micrometers vary in size depending on the size of the lung. Depending on the type of diffusion, the size of the particles is determined. The purpose of this study is to determine the number of particles and to compare with the standard number 1 / 14644ISO / DIS in the 7 special sections (delivery block, operating room, Cardiac Care, Surgical Care, Neonatal Care, Angiography) Razavi Hospital with 320 beds Highly, on both sides of the summer and the next, and two shifts in the morning and afternoon.</p> <p>Materials and Methods: In this analytical-descriptive study, 432 locations of particles were performed using GT-526S met one in different parts of the section and the average number of particles was reported. This small and lightweight machine is capable of counting particles in sizes of 0.3, 0.5, 1, 2, 5 and 10 microns over a period of more than one minute. Meanwhile, the microbial load of the parts was measured simultaneously inactive. , Then the results were recorded in Excel and analyzed in spss.</p> <p>Results: The use of a ventilation system and a timely replacement of filters will reduce particles in the hospital environment and, as a result, reduce the number of pathogens.</p> <p>Conclusion: The average number of particles 10 is significant on the amount of microbial load, but other particles (0.3, 0.5, 1, 2, 5) have no effect on the amount of microbial load, given that the error level of the t value is higher than 0.05. And the regression coefficient is 0/862, which means that due to the increase of a standard deviation in the particle variable 10, the amount of microbial load will be 0.8286 standard deviations.</p>



Study for monitoring of carbapenem-resistant *Pseudomonas aeruginosa* Trends and Interventions from 2010 to 2017 in burn department of Shafa Hospital, Kerman

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ARTICLE INFO

Keywords:

antimicrobial resistance
carbapenem
pseudomonas aeruginosa

ABSTRACT

Introduction: *Pseudomonas aeruginosa* is a common gram-negative bacteria that can cause health-care associated infections, especially in burned patients. Continuous expansion of the resistant type requires an active surveillance system. This system is effective in proper treatment and prevention of further resistance. This study aimed to determine the trend of carbapenem-resistant *pseudomonas aeruginosa* changes, and interventions.

Materials and Methods: This cross-sectional study was conducted in Burn ward from 2010-2016.

Passive surveillance for positive cultures was used. Resistance to antibiotics was performed by disk diffusion method. Data were collected using HIS system & laboratory.

Control of drug resistance program (2013-2017) include: appropriate hand hygiene, contact precautions, training, isolation and environmental hygiene practices and management of prescription of antibiotics.

Results: The total number of positive cultures during this period was 909, of which 218 (24%) were *pseudomonas*. The rate of resistance to imipenem was 62% in 2010-2012, 53% in 2013-2016 and 31% in 2017. The rate of *P. aeruginosa* resistance to meropenem was 10% in 2010-2012, 31% in 2013-2016 and 28% in 2017.

There is no intervention in this period (2010-12), Imipenem administration was excessive and Meropenem was not prescribed. Interventions included (2013-2016): active surveillance, environment and source control, contact precautions/hand hygiene and antibiotic stewardship – (2017) best isolation.

Conclusion: Compared to previous years, the incidence of antimicrobial resistance has decreased. Our results provided useful information regarding antimicrobial resistance among burn patients and this will help in preparing effective guideline for therapy.



Study of Occupational Exposure among Healthcare Workers

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ARTICLE INFO	ABSTRACT
<p>Keywords: occupational exposure health care workers blood body fluids</p>	<p>Introduction: Health care workers often are at great risk of needle stick injuries and infectious diseases which transmitted via medical devices. With regard to the mentioned items and the importance of reporting rate and causes of injuries caused by exposure to blood and secretions in the Intensive Care Unite and Operating Room's staff, we decided to study in this field at the Motahari hospital.</p> <p>Materials and Methods: We conducted a cross-sectional study included 100 health care workers. The sampling method was convenience. We used a structured questionnaire to collect data. Validity and reliability of questionnaire were determined by content validity and Cronbach's alpha respectively. Data were analyzed by SPSS version18.</p> <p>Results: In the past six months (77%) of HCW's had at least once exposure (needle stick injury / Sprinkled of blood and secretions) which (56%) were not reported by injured persons. The most of exposed HCW's were nurses (31%). Needle was the most equipment that caused damage (83%). Also the most exposure occurred at day shift (48%). Most of injuries happened in operating room (37%). There was significant differences between ward and needle stick ($p=0.002$) and between job and sprinkled ($p=0.01$).</p> <p>Conclusion: The results showed there is a high rate of exposure and low reporting which by implementation such as training of personnel, registered standard protocol for reporting and management of exposure reasons can reduce them.</p>



Microbial load of air in government and private hospitals in Qazvin city, Iran

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ARTICLE INFO	ABSTRACT
<p>Keywords: Nosocomial infection Bioaerosol IAQ Air Pollution <i>Staphylococcus aureus</i></p>	<p>Introduction: Nosocomial infections as a serious challenge in hospitals, can be caused by poor hygiene condition such as indoor air contamination. Airborne micro-organisms or bioaerosols accounts for between 10 and 20% of hospital infections. The aim of the present study was to determine Microbial load of air in government and private hospitals in Qazvin city.</p> <p>Materials and Methods: This descriptive, cross-sectional study was carried out over a period of three months in 8 and 6 wards of private and government hospitals and outdoor environments. Sampling was done by Quick Take 30 sampler and also single-stage Andersen impactor at an 28.3 L/min airflow as CFU/m³. Air temperature and humidity ratio was recorded simultancy.</p> <p>Results: Results indicated that the highest concentration of total and fungal bioaerosols was for ICU and CCU of private hospital. Thirteen groups of fungi were detected with species of <i>Aspergillus</i> and <i>Penicillium</i> as the most frequency fungi. Mean density of <i>Staphylococcus aureus</i> and GNB were highest in government hospital. Significant associations between total microbial, <i>Staphylococcus aureus</i>, temperature and humidity ratio was found (p<0.05).</p> <p>Conclusion: In 93.7% samplings stations, the total microbial density were greater than those proposed by ACGIH (75 CFU/m³). Almost all indoor air samples showed higher bioaerosols concentrations than outdoor that may be due to disinfection activities, human population and type of patients. Therefore it is suggested to continuous monitoring of IAQ, promotion of hospital hygiene service and ventilation systems in order to control of the microbial load of indoor air.</p>



The survey of knowledge and practice of nurses in standard precautions to prevent nosocomial infections in hospitals of Mashhad University of Medical Sciences

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ARTICLE INFO	ABSTRACT
<p>Keywords: Knowledge Professional Practice Nursing Staff Nosocomial Infections</p>	<p>Introduction: Hospital infection is one of the most important problems which is considered by health care centers. Assessment and control of nosocomial infections is a global priority which decreases length of hospitalization and also significantly reduces the health care costs by minimizing infections. So the present study evaluated the knowledge and practice of nursing staff in Disciplines Standard Precautions to prevent nosocomial infection.</p> <p>Materials and Methods: This Cross-sectional and analytical study carried out on 130 nursing staff of hospitals of Mashhad university of medical sciences in 2017. Data collected with a valid and reliable questionnaire including of knowledge and practice of nursing staff in Disciplines Standard Precautions. Data was analyzed by SPSS software using descriptive and analytical statistical methods and pearson correlation.</p> <p>Results: The mean score of knowledge was 46.92 ± 14.66, practice 49.46 ± 6.96. There was not significant relationship between knowledge and Practice, but there was a significant relationship between self-efficacy, knowledge, practice and marriage ($p < 0.05$). Moreover there was a significant relationship between knowledge and gender. ($p < 0.05$).</p> <p>Conclusion: Majority of nurses did not have appropriate knowledge about prevention of nosocomial infections based on the findings of this study. Considering the important role of nurses in prevention of nosocomial infections, training is necessary to increase the prevention behaviors in nurses. Therefore, paying more attention to apply actions for training of nurses is necessary.</p>



Survey the prevalence of plasmid-dependent beta-lactamase resistance genes in gram-negative bacteria (*Acinetobacter*, *Proteus*, *Klebsiella* and *Escherichia coli*) commonly present in Amir al-Momenin Burns Hospital in Shiraz

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ARTICLE INFO

Keywords:

Plasmid
Beta-Lactamase
Acinetobacter
Proteus
Klebsiella
Escherichia Coli

ABSTRACT

Introduction: The ESBL enzymes producing, is the most important resistance factor against β -lactam antibiotics among gram-negative bacteria family. The purpose of this study was to investigate the prevalence of plasmid-dependent beta-lactamase resistance genes in gram-negative bacteria commonly reported in Amir al-Momenin Hospital.

Materials and Methods: In a one-year period (2016-2017), 180 clinical specimens were collected from the hospital. After phenotypic identification, the samples were extracted using Alkaline lysis with SDS plasmid. By using specific primers, the presence of *tem*, *shv*, *pse*, *oxa10*, *ges*, and *kpc* genes in plasmids was investigated by PCR method. Data were analyzed using SPSS 22 software.

Results: Of 180 gram-negative bacteria isolated, 72(40%) *Acinetobacter*, 1(0.6%) *Klebsiella*, 88(48.9%) *Pseudomonas aeruginosa*, 1(0.6%) *Proteus*, 2(1.1%) *Escherichia coli* and 16 (8.9%) were other gram-negative bacteria. The isolated samples included 33(43.4%)wound specimens, 23(30.3%)urine specimens,10(13.2%)tissue samples, and the remaining specimens included throat and nose swabs. Of the obtained samples, 76 samples including 4 bacteria were studied in this study, which included 51(67.1%) males and 25(32.9%) females with a mean age of 28.25 ± 1.91 . The presence of plasmid-dependent Extended-spectrum beta-lactamase genes was 24(31.6%) *tem*, 1(1.3%) *ges*, 47(61.8%) *shv*, 10(13.2%) *oxa10*, 16(21.1%) *pse* and (0%) *kpc* were obtained.

Conclusion: With increasing drug resistance and confirmation of the presence of ESBLs and multi-drug resistance in pathogens, regular molecular monitoring of these genes in burn patients and other patients admitted to hospitals in the country is suggested.



Survey Water and Fluid Hemodialysis Microbiological Quality and Risk of Transmission Nosocomial Hospital Infection

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ARTICLE INFO	ABSTRACT
<p>Keywords: AAMI Hemodialysis Water Treatment Endotoxin Hospital Infection</p>	<p>Introduction: A dialysis patient is treated 3 times a week with approximately 150 liters of dialysis fluid. The dialysis fluids consist of up to 99% of reverse osmosis water in addition 1% acids, salts and bicarbonate. Improper operation of water treatment system for hemodialysis, patients at risk with microbial contamination and chemical toxicity. In this research, determining the microbiological quality of water and dialysis fluid Qom-Kamkar Hospital As the main center hemodialysis is performed.</p> <p>Materials and Methods: This Cross-sectional study was performed during 6 month. Sampling and testing was performed according to the AAMI guidelines. Microbiological quality based on the amount of bacteria CFU/ml and endotoxin EU/ml was reported according to AAMI standards. Data analysis Descriptive statistics of mean and standard deviation, minimum and maximum were performed.</p> <p>Results: 35.41% of the water distribution network is higher dialysate contamination Based on AAMI standards 37.5% of the samples with levels higher than JSDT are Ph Eur standards. In all samples of raw water to the water treatment system for dialysis was endotoxin. The rate of industrial RO or primary RO 83.3 percent and then fell to 50% secondary RO (medical RO). A total of 87.5% were of the higher EU AAMI, Ph Eur and JSDT standards.</p> <p>Conclusion: Unacceptable Microbiological quality of water and dialysate on bacteria and endotoxin standards AAMI, Ph Eur and JSDT was observed in some samples. Staff training and monitoring of microbiological quality control parameters on a regular basis AAMI standard and documented Performing disinfection water treatment system with scientific methods and infection control committee responsible dialysis unit can dialysis water treatment system performance, and help to create a safe environment for patients lead.</p>



Evaluation of Evidence-Based Patient Management Standards in the Hospitals Affiliated to Mashhad University of Medical Sciences, Mashhad, Iran

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ARTICLE INFO

ABSTRACT

Keywords:

Patient safety
Safe clinical services
Standard
Hospital

Introduction: The analysis of safety standards is one of the aspects of patient safety improvement efforts. Therefore, this study was conducted to assess safety and evidence-based patient management standards in one of the hospitals affiliated to Mashhad University of Medical Sciences, Mashhad, Iran, in 2016.

Materials and Methods: This descriptive and analytical study was carried out in one of the hospitals affiliated to Mashhad University of Medical Sciences, Mashhad, Iran, 2016. Data was collected using the Patient Safety Assessment Protocol developed by the World Health Organization (WHO), which was completed by interview, observation, and document analysis. Data analysis was performed using descriptive and analytical statistics in SPSS software, version 19.

Results: The mean scores of mandatory, basic, and advanced standards of 31 departments of the hospital were 71.5, 56.8, 31.2, respectively, which were not acceptable according to the protocols of WHO. The intensive care unit, and emergency and heart departments achieved the highest scores. Additionally, these departments were at level 2 based on the protocol levels. There was no significant difference between the departments considering compliance with the standards.

Conclusion: Compliance with the standards in the hospital was appropriate in terms of basic and advanced standards, while it was low regarding the mandatory standards. It is essential for hospitals to develop promotional programs in the context of the proposed system of effective clinical and blood safety. A comprehensive targeting of the above standards is recommended.



Prevalence of urinary tract infections with etiologies other than *E.coli* in children

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ARTICLE INFO

Keywords:
UTI
Children
urinary obstruction
VUR
neurogenic bladder

ABSTRACT

Introduction: This study was conducted to determine whether infections with Non E-coli pathogens are different in cases with urological anomalies, neurogenic bladder and those with apparently no predisposing factor for infection?

Materials and Methods: children referred to nephrology clinic between June 2002-2016 after imaging and urodynamic evaluations categorized into 4 subgroups : cases with VUR ,urinary obstruction ,neurogenic bladder and apparently no predisposing factor(normal sonography and VCUG). Then the prevalence of infection with E-coli and non-E coli pathogens were compared . Cases didn't undergo VCUG and those with nephrolithiasis as the only predisposing factor excluded.

Results: 316 cases of VUR, 246 patients with no predisposing factor, 56 cases of neurogenic bladder and 29 patients with obstruction enrolled .Non -E-coli pathogens were responsible for infections in 18.13%, 15.6%, 29 % and 15.15 % of episodes of infections in subgroups respectively .Infections with non-E coli pathogens were significantly more prevalent in cases with neurogenic bladder (P=0.021).Of 11 episodes of pseudomonas infections 54.5% and 45.5% were found in case with apparently no predisposing factor and subjects with neurogenic bladder.

Conclusion: Infection with non-E coli pathogens are significantly more prevalent in patients with neurogenic bladder.



The role of the Microbiology Laboratory in Antimicrobial Stewardship Programs

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The major goals of antimicrobial stewardship programs (ASPs) are to promote appropriate selection and use of antibiotics in terms of dosing, duration and route of administration, therefore to minimize antimicrobial resistance as well as other unintended consequences, such as antimicrobial toxicity, adverse drug reactions, and *Clostridium difficile* diarrhea. While infectious disease physicians, with clinical pharmacists, are considered the main leaders of antimicrobial stewardship programs, clinical microbiologists can play a key role in these programs. The Clinical microbiology laboratories play an essential role in the stewardships activities. Microbiology laboratories perform accurate and timely identification of microbial pathogens and resistance genes, potentially resulting to optimal therapy and related clinical outcomes. Clinical microbiologist has pursued incorporating of accurate biomarkers into ASP by providing more accurate infection diagnosis, monitoring clinical response, and guiding the duration of treatment. Finally, clinical microbiology laboratories are essential for the surveillance of antimicrobial-resistant organisms and for organizing and communicating resistance trends. Cumulative Antimicrobial susceptibility reporting, antibiogram, has many uses including helping prescribers select effective therapy when culture results are pending, updating local guidelines for empirical therapy, updating perioperative prophylaxis recommendations and surveying local resistance, identifying targets for stewardship interventions. From the antimicrobial stewardship viewpoint, the method of cascade or selective reporting has a profound impact on prescribing habits. In cascade reporting, clinical microbiologist provide only a limited number of tested antimicrobial susceptibilities based on formulary availability, local cumulative susceptibilities, and cost and report susceptibility to broader –spectrum drugs only when isolates are resistant to drugs in the first "cascade".

Keywords: Antimicrobial stewardship programs,

Microbiology, antibiogram



Healthcare Associated Crimean-Congo hemorrhagic Fever in Iran: A Literature Review

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Crimean-Congo hemorrhagic fever (CCHF) is a major public health threat due to its high case fatality rate, possible human to human transmission and lack of specific treatment and licensed vaccines. The etiological agent of CCHF is a Nairovirus that is transmitted to human via the bite of infected ticks or direct contact with blood or tissues of viremic animals or other patients. Nosocomial transmission of CCHF virus is well documented and healthcare workers are at a great risk of infection in endemic areas such as Iran .

This study was conducted to review all healthcare related CCHF virus infection in Iran to provide a better understanding of risk factors and routes of transmission in the country. A total of 5 scientific papers reported 4 nosocomial outbreaks affecting healthcare personnel in 4 cities: 2 from Mashhad (in 2009 and 2013) and 1 from Isfahan (in 2001), Shahrekord (in 1999) and Jahrom (2008). Totally, 11 cases including 6 physicians and 5 nurses were reported with 18.2% case fatality (2 out of 11); among them needle sticks injury, blood splash into face and skin contact to blood were the most common possible routes of infection.

As all nosocomial outbreaks occurred prior to 2013, it can be concluded that preventive actions to decrease the CCHF among healthcare workers were effective. However, continuous education of infection prevention and control protocols emphasizing the appropriate use of personal protective equipment and sharps safety poses a great importance to maintain this trend.

Keywords:

Crimean-Congo Hemorrhagic Fever, Healthcare workers, Iran



Acute Rheumatic Fever

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Introduction

Acute rheumatic fever (ARF) is an inflammatory process that involves multiple organs of the body. Tonsillopharyngitis by group A β -hemolytic Streptococcus is the main cause of this rheumatic disease. There is an interval of 2 to 3 weeks between the streptococcal infection and the clinical onset of the ARF.

The most common clinical features are arthritis, carditis, chorea, a characteristic rash, and subcutaneous nodules. (Jones Criteria-1992)

Incidence & Epidemiology

The incidence of ARF is similar to that of group A streptococcal pharyngitis and its peak is from the age of 6 to 15 years old. ARF occurs more in tropical countries, particularly in developing countries. Incidence rates are 23 in Kuwait per 100,000 population, 35 in Iran and 51 in India. It has been estimated that 95% of the cases of rheumatic heart disease in the world which are about 20 million each year occur in developing countries.

Treatment and Prophylaxis

The main treatment of ARF is eradication of streptococci that causes this complication and the inflammatory process involving the several organs. All patients with ARF must be evaluated for cardiac involvement. Prophylaxis of streptococcal infection to prevent recurrence and treatment of cardiac disease (if present) including prevention of bacterial endocarditis are other necessary management.

It has proved that prophylaxis against streptococcal pharyngitis is highly effective in reducing recurrences of rheumatic fever and in preventing potential heart damage.

Keywords: Acute rheumatic fever, prophylaxis, recurrence



Bacterial contamination in liquid soap in a large-sized University hospital in northeast of Iran

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ARTICLE INFO

Keywords: Hand washing , liquid soap, contamination, microorganisms

ABSTRACT

Introduction: Hand washing is a known way of controlling bacteria and preventing the infection transmission from one person to another in hospitals . If the washing process does not be performed efficiently or the soap is contaminated, the hands could be a source of infection transmission among health care workers (HCWs) and patients. We performed this study to obtain general information on soap use and soap bacterial contamination, and to assess the risk of transmission of organisms from contaminated soap to patients.

Materials and Methods: This cross-sectional study, carried out at Ghaem University hospital, a teaching (884 beds) hospital in Mashhad in northeast of Iran, to identify the presence of microorganisms in liquid soap. Samples were collected during 2017 from soap containers located in nurse stations and corridors at different wards. Samples were inoculated to the nutrient medium. The tubes were incubated at 37 C for 24 hours. Any bacterial growth was identified. According to the number of colonies, the contamination was classified as low, medium and high.

Results: A total of 26% of liquid soaps were contaminated. The rate of contamination was higher at gynecology and surgery wards. In these wards, gram negative bacilli were more prominent and gram positive cocci were more common in wards with less contamination. The contamination rates of soaps were correlated with the conditions in which the soaps were kept.

Conclusion: According to the results obtained, the safety of soaps should receive more attention and The healthcare setting should follow guidelines for keeping the contamination as low as possible.



Etiological Diagnosis of Community-Acquired Pneumonia in Adult Patients: A Prospective Hospital-Based Study in Mashhad, Iran.

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ARTICLE INFO

Keywords:

Etiology

Pneumonia

Streptococcus pneumoniae

Tuberculosis

ABSTRACT

Introduction: This prospective observational study is an etiological survey of community-acquired pneumonia (CAP) over a 12-month period in the Iranian city of Mashhad. To our knowledge, this is one of the first prospective hospital-based studies to comprehensively evaluate the epidemiological, demographical, clinical, and prognostic factors of patients with CAP in Iran.

Materials and Methods: We studied all adult patients (aged ≥ 16 years) with CAP admitted to Imam Reza Hospital, Mashhad, Iran, between February 2013 and January 2014. The etiological diagnosis of CAP was made through conventional culturing and staining of respiratory secretions (i.e. sputum and pleural fluid), standard BACTEC™ Plus Aerobic/F bottles for blood cultures, and the immunochromatographic assays BinaxNOW® *Streptococcus pneumoniae* antigen and BinaxNOW® *Legionella pneumophila* antigen for the detection of *S. pneumoniae* antigen and *L. pneumophila* serogroup 1 antigen, respectively.

Results: Among 120 patients with CAP, the most common etiology was *S. pneumoniae* (24.4%), followed by *Mycobacterium tuberculosis* (17.5%), *S. aureus* (6.7%), polymicrobial agents including anaerobes (4.2%), complicated hydatid cyst (2.5%), *Influenza A virus* (4.2%; including 2 cases of mixed Influenza A-bacterial infection), and *Klebsiella pneumoniae*, *Brucella melitensis*, *Mucor* and varicella, each in 0.8% of the patients. The diagnosis of pneumonia remained unknown in 49 (40%) patients.

Conclusion: Tuberculosis was an important cause of CAP in our region. Hence, it should be considered in all patients admitted with a CAP diagnosis



Education program on HH: The assessment of a training workshop on the knowledge and attitude of medical students

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ARTICLE INFO

Keywords:

Hand hygiene
Education
Medical students
Knowledge
attitude

ABSTRACT

Introduction: Hand hygiene is considered the most important measure to reduce the healthcare associated infections. The main aim of this study was to evaluate the effect of an educational program among medical students' knowledge and attitude toward hand hygiene (HH) at Mashhad University of Medical Sciences.

Materials and Methods: Two groups of medical students of Mashhad university of medical sciences (the first group consisted of the medical students who just passed the physiopathology course and the second group was the students at the beginning of the residency period) were selected to participate in the study during 2017. The Persian version of WHO questionnaire on HH knowledge and attitude were completed by each participant. Then they attended a teaching workshop about the importance and the method of hand hygiene. The same questionnaire was filled by the participants on finishing and 3 months after the workshop. The paired t test was used for analysis of the data.

Results: A total of 277 medical students entered to the study. About 71% completed the study. The knowledge level of the residents was significantly higher than the externs at the beginning of the study ($p < 0.001$). There was a significant difference between the pre-test and the immediate post-test scores on HH knowledge and attitude of the attendants ($P < 0.001$). However, the late post-test scores reduced compared to the immediate post-test scores, but they are still higher than the pre-test scores ($P < 0.001$).

Conclusion: Training program can improve the knowledge and attitude toward hand hygiene. Regular course is recommended to maintain the knowledge and attitude levels.



Establishing a Clinical Microbiology Laboratory in Iran: a 26-year Experience

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The clinical microbiology laboratory (CML) plays a critical role in accurate and rapid diagnosis of infectious diseases and their surveillance. Emerging infectious diseases as well as increasing rate of antibiotic resistant pathogens are among the challenges facing the health care systems. Increasing required lab tests, advanced equipment, financial limitation, shorter turnover time, need for trained staff, lack of adequate infrastructures are also challenges facing the CMLs, especially in developing countries.

Since 1992, Professor Alborzi Clinical Microbiology Research center (PACMRC) in association with Shiraz University of Medical Sciences has contributed a lot to the promotion of laboratory standards and services provided to the patients through training and conducting research studies.

In doing so, the focus has been on epidemiology, immunopathogenesis, diagnosis and treatment of common endemic infectious diseases. PACMRC has also developed new molecular methods for the diagnosis of important pathogens such as Cytomegalovirus, Epstein-Barr virus, Herpes simplex virus, Hepatitis viruses and human immunodeficiency viruses, invasive fungal pathogens, Leishmania, and Mycobacteria. The surveillance of antimicrobial resistance and periodic reporting have been done in Shiraz. New therapeutic and management protocols for asymptomatic giardiasis, invasive fungal infections in immunocompromised hosts, the outbreak of meningococemia among Hajj pilgrims, the short-course therapy of visceral leishmaniasis, and the empirical treatments of nosocomial infections and bloody diarrhea have been developed. The center has also contributed significantly to national decision making regarding introducing Haemophilus influenzae type b vaccination nationwide.

The close and efficient communication between clinicians and professionals in basic sciences has led to more familiarity of clinicians with up-to-date lab methods and in return the professionals in basic sciences gained further knowledge about existing local issues in infectious diseases. As for education, the fellows of pediatric infectious diseases and PhD students both have enjoyed training in different labs under the supervision of basic scientists and clinicians.

Taking into account our 26-year-experience in CML, the close and more efficient contribution of clinicians and basic science experts and the providing more sophisticated facilities can help promote health standards locally and nationally.

Keywords:

clinical microbiology, antimicrobial resistance, Iran



Role of the Microbiology laboratory in Infection Prevention Program in Hospitals

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The clinical microbiology laboratory is essential to a comprehensive infection prevention program. The microbiology laboratory plays a paramount role in the surveillance of nosocomial infections, which is a crucial element of an infection control program. The surveillance of nosocomial infections provides the data to identify infected patients and determine the site of infection and the factors that contributed to the infection. The seven activities of microbiology laboratory in this surveillance include (1) proper specimen collection; (2) accurate and rapid identification of pathogens and their susceptibility testing; (3) establishing laboratory information systems for comprehensive information /ordering; (4) rapid reporting of laboratory data; (5) outbreak recognition and investigations using molecular typing; (6) maintaining organism storage; (7) maintaining cultures of specimens from hospital personnel and the environments.. Nowadays, detection of infectious agents/molecules/genes replace widely conventional growth and identification procedures in modern microbiology laboratory. Application of molecular typing techniques can recognize and confirm an outbreak, clusters of patients within hospitals, track spread between hospitals over time, document hospital transmission, and measure impact of intervention strategies. Maintaining high-quality clinical microbiology laboratories in hospitals is the best approach for managing issues related to infection control by providing optimal patient care outcomes.

Keywords:

Infection control, Clinical microbiology laboratory, Hospital epidemiology



Infection control in dental Facilities, special focus on blood-borne infections

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The world's approach to preventing treatment by taking advantage of the latest standards and guidelines of well-established centers and organizations of health in the developed countries has paid special attention to the issue of controlling infections caused by the provision of health services. Dental work and its related environments also the frequent contact with staff, the environment and equipment with blood, saliva, and contaminated discharge of the patients and the risk of transmitting the infection to the staff, the patient and the community is constantly increasing, as it is necessary to correctly address the diffusion of pathogenic microorganisms to minimize those infections. Man to Man, Animal, contaminated instruments and surfaces, air and water in the clinics and health centers with trained carefully and rigorously applied. The emergence of microbial resistance and the presence of new and emerging viruses in the community and medical centers, including dental clinics, has increased the importance of paying attention to these standard precautions.

Careful attention to the training and precise knowledge of the ways of transmitting microorganisms in dental clinics, especially blood-borne pathogens, standards for the use of disinfectants and sterilization methods, hand sanitation and the proper use of personal protective equipment, the presence of biofilms at certain levels and water pipes Office air and ultimately environmental pollution and dental wastes are the main tasks of the dentist and the management of such centers, and the lack of proper implementation of the laws on infection control, professional breach, and irreparable damage to the community and the community itself.

The requirements in this section are based on the prevention and control of infection and the management of health and safety issues for patients and those working in dental health centers. Work limitations for employees of these centers are high in the case of infectious diseases and the risk of exposure to blood-borne pathogens, including post-infection prophylaxis for hepatitis B, C and HIV viruses.

Keywords:

Infection control, blood-borne infections, dental environments



Influenza Vaccine Coverage before and after of Influenza Vaccination Ceremony among Health Care Workers: Results of a Survey in an Iranian University Hospital

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ARTICLE INFO

Keywords:
Influenza
Vaccination
Ceremony

ABSTRACT

Introduction: Immunization guidelines recommend influenza vaccination of health care personnel. However, influenza vaccination rates among health care personnel are often below targeted levels and vary across health care centers. The objective of this survey was to analyze vaccination coverage among health care workers before and after of Influenza vaccination ceremony.

Materials and Methods: A cross-sectional study was conducted among health care personnel by using a questionnaire before and after of Influenza vaccination ceremony. In vaccination ceremony one dose of Influenza vaccine was provided free of charge to eligible personnel.

Results: During the period 22 November to 21 December 2017, 30(12.7%) health care workers from 236 personnel received the seasonal influenza vaccine. After Influenza vaccination ceremony, from a total of 236 health workers, 178 (75.4%) received the seasonal influenza vaccine .

Conclusion: Despite international recommendations for influenza vaccination, we observed a low prevalence of flu vaccine among health care workers. Flu ceremony can increase coverage rate considerably.



The effect of Antibiotic Stewardship targeted against vancomycin and carbapenems in pediatric intensive care unit of Doctor Sheikh Hospital

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ARTICLE INFO

Keywords: intensive care units, antibiotic stewardship program, Iran

ABSTRACT

Introduction: The inappropriate use of Broad- Spectrum antimicrobials in intensive care units (ICU) is a universal problem. The main goal of this study was to implement antibiotic stewardship program (ABS) concentrated on vancomycin and carbapenems, in pediatric ICU (PICU) of Sheikh hospital. As an accessory purpose we looked for the effect of ABS on the rate of antibiotic administration, length of hospital stay and mortality.

Materials and Methods: This study was performed in 2 stages, at the first phase; we determined the causes of nosocomial sepsis and their antibiotic (AB) resistance pattern in the PICU, and then according to those findings a guideline for administration of vancomycin and carbapenems was performed. In the second stage the files of PICU patients were reviewed every other day (for 3 months), and recommendations about the compatibility of the prescriptions with the guideline were given to the responsible doctor. At the end, we compared the effects of the intervention with one month of prospective record of AB prescriptions without any recommendation.

Results: We recorded 1676 and 673 patient/days during 3 month of ABS and 1 month of control. During ABS period, vancomycin use decreased from 294 to 178 for 1000 patient/days ($P=0.001$), carbapenems administration changed from 433 to 193 for 1000 patient/ days ($P=0.001$), the LHS decreased from 11.4 to 8.4 days ($P=0.06$) and mortality rate decreased from 10.2 to 7 ($P=0.4$).

Conclusion: In a situation like Dr Sheikh PICU, implementation of ABS for vancomycin and carbapenems has a favorable effect on AB usage rate .



Comparison of Hand Hygiene compliance in different wards

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ARTICLE INFO

Keywords: Hand hygiene, compliance, multimodal intervention

ABSTRACT

Introduction: Multimodal technique should be used to improve hand hygiene compliance in health care setting. This cross-sectional observational study was conducted to investigate the difference in hand hygiene compliance in different wards in order to plan better strategies to promote.

Materials and Methods: This was a cross-sectional observational study using direct observation technique. A single observer collected all hand hygiene data. During this analysis, hand hygiene compliance in different opportunities was observed in all wards at Ghaem university hospital. Hand hygiene compliance was tested for all 5 moments as per WHO guidelines. Then we compared the hand hygiene compliance in different wards.

Results: Overall compliance as per WHO Guidelines was 59%. Compliance was 52% before touching a patient, 56% before a clean/aseptic procedure, 60% after touching a patient, 55% after touching patient surroundings and 84% after body fluid exposure risk. Nurses' compliance was highest among other staff. Hand hygiene adherence was much lower in emergencies wards that other non-emergencies ward.

Conclusion: After several year of multimodal intervention in improving hand hygiene compliance, we have still an overall compliance of 59% which is not enough at all. It implies that improving compliance to hand hygiene needs ongoing training. The compliance in emergency wards was significantly lower that other wards which emphasis on need for more attention.



Interpretation of Mantoux Test in Children Tuberculosis

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The tuberculosis skin test (TST) (PPD test / Mantoux test) is a useful tool which is used as an important test for screening and diagnosis of tuberculosis. The tuberculin reaction was first reported by Robert Koch on 1890. This delayed-type hypersensitivity reaction is caused by the injection of the components of *M.tuberculosis* intradermally. The basis of the reading of the skin test is the presence or absence and the amount of induration. The Mantoux test is interpreted in the context of clinical signs and symptoms and epidemiologic risk factors. In those cases with negative TST results for the first time, it may be useful to repeat the TST after three weeks. This is particularly helpful in health care workers including nurses.

Anergic patients may have a negative TST reaction even if they have TB infection. Anergy is the inability to mount a delayed-type cutaneous cellular immune response to an antigen to which one has previously been sensitized.

The test result must be interpreted carefully, considering the patient's medical risk factors which determine the size of positive results (5mm, 10mm or 15mm)

* ≥ 5mm or more is positive in (High-risk patients):

- HIV positive with recent exposure
- Patients with positive clinical manifestations of tuberculosis
- Recent contacts of active tuberculosis cases
- Patients with changes in chest X ray consistent with tuberculosis
- Patients on long-term systemic corticosteroid therapy.

* 10-14 mm or more is positive in (Moderate-risk patients):

- Persons traveling to high-prevalence countries
- Patients receiving anti-cancer therapies
- Persons working in hospitals
- Children less than 4 years of age exposed to tuberculosis cases
- Persons with clinical conditions that place them high risk (e.g., Diabetes, end-stage renal disease, malignancy, etc(...

* ≥ 15mm or more is positive in (High-risk patients):

- Persons with no known risk factors for tuberculosis.

PPD test does not differentiate between active and latent tuberculosis.

Keywords: Tuberculosis, Mantoux test, interpretation



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There are two major types of skin reactions associated with hand hygiene. The first and most common type, irritant contact dermatitis, includes symptoms of dryness, irritation, itching, erythema and even cracking and bleeding. Risk factors identified for skin alteration following hand rub use are male sex, fair and very fair skin, and skin alteration before use. The second type of skin reaction, allergic contact dermatitis, is rare and represents an allergy to some ingredient in a hand hygiene product. It can also range from mild and localized to severe and generalized form. It is sometimes difficult to differentiate between the two conditions. By applying certain methods such as, selecting less irritating hand hygiene products; avoiding certain practices that increase the risk of skin irritation; and using moisturizing skin care products following hand cleansing, it is possible to reduce these unwanted reactions.

Keywords:

Hand hygiene, contact dermatitis, moisturizing skin care products



An overview of Infections related to transplantation

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All kind of tissue transplantation including blood transfusion, solid organ transplantation (SOT) and bone marrow transplantation (BMT) are potentially at risk of infection transmission. Among each kind of transplantation some specific infections become predominant.

Immunosuppressive drugs used for transplantation, underlying disease leading to organ transplant, surgical procedure and prolonged hospitalization are common predisposing factors for different kind of infections including opportunistic infections and unusual conditions (like chronic HEV).

Source of infection might be donor-derived, nosocomial and finally community acquired infections which apparently occur in different time tables ranging from pre-transplant to post-transplantation procedure.

Some donor-derived infections such as HBV, HCV, HTLV-1, HIV-1 are generally checked before the procedure. However in some cases reactivation of donor-related infection occurs in recipient's body. For example reactivation of latent CMV, VZV, EBV (responsible for: EBV-PTLD: Post-transplant lymphoproliferative disorder) or other herpes viruses like HHV6, HHV8 may lead to symptomatic infections. Other kinds of infection-activation have been also observed including: M.tuberculosis, papillomavirus, adenoviruses, BK virus (leading to post-transplant nephropathy and hemorrhagic cystitis after BMT), Histoplasma and other fungi or parasites.

In addition to latent infections, transmission of an asymptomatic active viral infection such as parvovirus B19 from a donor may lead to symptomatic illness in recipient. Globally transmission of uncommon donor-derived viral, bacterial, parasitic and fungi infections have been reported, among which life threatening viruses, drug resistant bacteria or resistant candida or unmanageable fungal infections are of great importance.

Guidelines for prophylaxis and management of infections related to organ transplantations are now available for clinicians.

Keywords: Transplantation, infection, microorganisms



Overview of Antibiotic Usage and Report of Antibiotics Stewardship in Ghaem University Hospital

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ARTICLE INFO

Keywords: Antibiotics, prescription, hospital, Iran

ABSTRACT

Introduction: Today, with the development of antibiotic resistance, the need for more efficient use of antibiotics was more obvious. It is very important to pay close attention to usage of antibiotics than before. During 2016 we tried to clarify the challenges of antibiotics use in hospital and influence of antibiotics stewardship in an university hospital. The report focuses on the economic impact of applying antibiotics stewardship in this healthcare setting.

Materials and Methods: In this report, the appropriateness of antibiotics used, the cost, the number and duration of antibiotics used per patient, the number of patients receiving antibiotics and the therapeutic outcomes was analyzed during 2016. For this purpose antibiotic usage were focused during two month in sector for neurological diseases.

Results: In February, 260 patients were admitted to the sector of neurological diseases at Ghaem hospital and 97 (37%) patients received antibiotics. During this time, the number of antibiotics prescription for 13 patients was in excess. The cost of antibiotics during this period was 359717700 Rials. During May, after some corrective action, although 573 people were admitted to the sector of neurological diseases only 136 (23%) patients received antibiotics. During this time, only 5 patients received antibiotics inappropriately, and the cost of antibiotics was 255197900 Rials.

Conclusion: According to the number of patients in May, there was a significant decrease in the number of patients receiving antibiotics and the number of patients receiving antibiotics inappropriately and off course the costs of antibiotics.



The importance of specimen collection and diagnostic methods in the study of viral infection outbreaks

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Many outbreak investigations involve the collection of human clinical specimens from outbreak-associated case patients. In the field of epidemiology, most case definitions rely upon laboratory confirmation of the specific virus to confirm a case. Accurate diagnosis ensures that proper surveillance takes place and adequate control measures are made during epidemics.

Although much emphasis is placed upon the efficacy of the diagnostic test, but no assay can provide meaningful results if the specimen has not been collected, stored, and transported with care. In this regard, it is important to pay attention to a few points. First, the appropriate collection and handling of samples is very important for virology diagnosis. When sample collection and management are not priorities, the laboratory can contribute little to patient care / community health. Therefore, all laboratory personnel must ensure the critical nature of ensuring quality. It is the responsibility of the laboratory to provide complete and careful specimen management information to the health care workers who have the primary responsibility of collecting the samples. Second, Biosafety in the laboratory is one of significant concern to the laboratories. Healthcare workers may be unaware of potential etiologic agents residing in the specimen being transported to the laboratory. To protect the safety of the healthcare worker collecting the sample and laboratory personnel, conducting continuous training classes is very influential. Third, generally, samples should be kept at 2-8°C during storage and transport. The quality of sample can deteriorate during storage or transportation which affects the diagnostic results. Hence, special care should be taken during transport of samples to the laboratory to protect them from heating or drying.

In recent years, there have been many advances in diagnostic virology, including improvements in viral antigen methods and the development of nucleic acid based techniques (NATs). However, Diagnostic methods based on NATs are characterized by their improved sensitivity and reduced time effort compared to culture-based identification. However, the detection limits of some methods are still not suitable for direct analysis of patients' material because of the low pathogen content. Nowadays, most of the NAT-based methods are relatively cheap and can easily be established as routine protocols without the need for experts for execution and evaluation of the results.

Keywords: Viral infection, outbreak, diagnosis, PCR



Framework of Prevention of Surgical Site Infection

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Surgical site infections (SSIs) are a significant part of nosocomial infections. SSI is defined by CDC as an infection related to an operative procedure that occurs at or near the surgical incision within 30 days of the procedure, or within 90 days if prosthetic material is implanted at surgery. SSIs develop in approximately 2 to 5 percent of the patients who undergo inpatient surgery in the United States. It is the most common health care associated infection in patients undergoing surgery. Judicious administration of appropriate preoperative antibiotics is one of the most important factors for prevention of surgical site infection (SSI). Active infections should be strongly treated in patients before surgery especially in patients in whom placement of prosthetic material is planned, but routine preoperative *Staphylococcus aureus* screening and decolonization for patients undergoing surgery is not recommended yet, except for nasal carriers of *S. aureus* with a high risk of dangerous complications, like cardiothoracic surgery, orthopedic procedures with hardware implantation, and immunosuppressed individuals. The use of high flow supplemental oxygen in perioperative time leads to decreased rates of SSI but routine use of laminar airflow there is not routinely suggested. Surgical techniques like effective homeostasis, irrigation of tissues with saline to avoid excessive drying, wound closure without tension removal of devitalized tissues, obliteration of dead space, and judicious use of closed suction drains can reduce the rate of SSI. perioperative normothermia also may the risk of SSI.

Keywords:

Surgical site infections, microorganisms, prevention



Use of antibiotics in treating cough

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Cough is one of the common symptoms of referral to a pediatrician, and unfortunately, antibiotics are prescribed in large numbers .

Cough is divided into three categories: acute, subacute and chronic. Cough is both a symptom of disease and defensive mechanism of body.

Most of acute coughs have a viral side, in which case people will either gradually heal or will be treated by short-term antihistamine compounds, so there will be no need to use antibiotics.

People must avoid taking these drugs unless prescribed by doctors.

Some antibiotics can cause severe allergies and some may cause lung failure, therefore their excessive and arbitrary use should be prevented .

When a cough lasts more than 8 weeks, chest X-rays should be taken. The most common cause of acute cough is infections, and infections include bacteria and viruses.

Acute coughs usually get better gradually and mostly there is no need to refer to a doctor. However, if the condition is accompanied by fever, sputum, chest pain and shortness of breath or other symptoms such as fatigue, it must be visited by a doctor.

Subacute cough develop after infections and are mostly allergic and are usually treated with antihistamine compounds.

Subacute cough increase due to allergies in a specific season.

In the event of an increase in air pollution, severity of allergies increases and bronchiolitis is also exacerbated as a result

Keywords: Cough, categories, antibiotics



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Nosocomial bloodstream infections (BSIs) are an important cause of morbidity and mortality while some primary BSIs have no identifiable source, most are associated with intravascular catheters, and central venous catheters (CVCs) in particular.

All types of intravascular catheters have significant risk of infection. Duration of catheterization, catheter material, insertion conditions, and site care also impact the risk of catheter-associated infections. Infection, phlebitis, and, less often, bacteremia remain a major problem with intravascular catheters.

Central venous catheters, originally introduced as vascular access for short-term dialysis, are occasionally used as a permanent vascular access. Both non-tunneled, non-cuffed catheters and tunneled, cuffed catheters are available. At present, tunneled, cuffed, double-lumen silastic catheters are the preferred access for short- and intermediate-term use in dialysis patients. These catheters are also used for permanent vascular access in some patients, particularly those with limited alternative options for vascular access.

The epidemiology, risk factors, pathogenesis, microbiology, treatment and prevention of intravascular catheter infections will be reviewed in this panel.

Keywords:

bloodstream infections, hospital, prevention



Febrile Neutropenia; a new approach

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ARTICLE INFO

Keywords: febrile neutropenia ,
risk factors, infections

ABSTRACT

Introduction: To determine risk factors (RFs) and their relationship with life-threatening infection (LTI) in children with febrile neutropenia (FN).

Materials and Methods: In this cross-sectional study, from December 2008 to November 2009, all children with FN admitted to Dr Sheikh Pediatric Hospital were enrolled. For each patient, demographic, clinical, and laboratory data were recorded and they were followed up for occurrence of LTI.

Results: One hundred and twenty episodes of FN in 68 patients were analyzed. The most common underlying disease was acute lymphoblastic leukemia (53.3%), 9 (7.5%) died from an infection and 35 patients (29.1%) had a LTI. Five variables were identified as RFs for LTI, that is, body temperature $\geq 39^{\circ}\text{C}$ ($P=0.000$), presence of mucositis ($P=0.000$), abnormal chest x-ray ($P=0.001$), platelet count $<20,000/\text{mm}^3$ ($P=0.000$), and absolute neutrophil count $<100/\text{mm}^3$ ($P=0.001$). Risk of LTI was increasing according to number of RFs presented at the beginning of admission (from 2.8% in patients without RF to 100% in patients with 5 RF). Data mining analysis showed relationship between RFs with platelet count as the most important variable in the high-risk group for LTI.

Conclusion: Evaluation of important RFs and judging the severity of patients' condition by studying the importance and relationship between RF at the time of admission can be a useful method for screening LTI in children with FN.



Role of zinc in prevention of infection in children

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The purpose of the present article is to highlight the important role zinc play in various illnesses in children. There is also need to study various benefits and rationale for supplementation with these trace element as a potential pharmacotherapeutic strategy in ill children and stimulating further research in this field. Normal homeostasis of zinc is required for proper functioning of immune system, adequate antioxidant activity, glucose homeostasis, and wound healing. In addition, zinc acts as a cofactor for many enzymes, transcription factors, and replication factors. In critically ill children, zinc level are found to be low and few studies suggested that supplementation with zinc may be associated with clinical improvement in this group of patients. However, the evidence to recommend the routine use of zinc supplementation in the critically ill children is inadequate. Further studies are needed to uncover the exact mechanisms for low levels of zinc; therapeutic role of zinc supplementation; and optimal dose that has a maximal beneficial clinical effect on underlying inflammatory, immunologic, and various metabolic processes in critically ill children.

Keywords:

Zinc, trace elements, infection, children



Biological Specimen Collection for Laboratory

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Today's technologies allow testing on an impressively wide variety of samples (sometimes called specimens) that are collected from the human body. Most commonly these are blood, urine, saliva, sputum, feces, semen and other bodily fluids, as well as tissue .

We want to know which method of sampling is correct and help us to detect the pathogen correctly without error. So we have to know about sampling, transport and protect the samples from pre lab to the lab. Some factors effect on results such as: collection, environmental & biologic agents ,time of sampling ,position of patients in sampling , amount of sample, factor, many factors of patients such as age ,smoking ,physiologic situation ,the kind of nutrition ,drug user ,

It is very important that all instructions for sample collection are carefully followed. See our Role Make sure we understand the instructions before collecting our sample. Requirements can vary between laboratories, hospitals and doctors. For example the proper collection of a specimen for culture is the most important step in the recovery of pathogenic organisms responsible for infectious disease. A poorly collected specimen may lead to failure in isolating the causative organism(s) and/or result in the recovery of contaminating organisms

Keywords: Laboratory, specimen, instruction



Invasive Fungal Infections in Febrile Neutropenic Patients

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Neglected invasive fungal diseases are the crucial causes of morbidity and mortality among febrile neutropenic patients after intensive chemotherapy or hematopoietic stem cell transplantation as well as in other immunocompromised populations. The overall mortality rate of invasive fungal infections ranges 10-59%. The diseases have non-specific signs or symptoms, and clinicians may decide to start empirical antifungal therapy practically. The most commonly identified fungal species associated with these infections are *Candida*, *Aspergillus*, *Zygomycete*, *Cryptococcus* and *Pneumocystis* species.

Accurate diagnosis of infection remains challenging, particularly in patients with hematologic malignancies. Traditional methods for diagnosis are wet mount examination and microbiological cultures. Serological methods with detection of antigen and antibody based assays, serum and bronchoalveolar lavage galactomannan level, β -1,3-D-glucan, JF5 assay (*Aspergillosis*), mannan and anti-mannan antibodies, molecular techniques, fluorescent in situ hybridization and T2 magnetic resonance (*Candidiasis*), MALDI TOF spectrometry technique, latexagglutination assay, and lateral flow immune-chromatographic assay together with radiographic and histological data can help treatment and outcome.

In conclusion, traditional methods are the gold standard for the diagnosis of fungal infections. Combination of serological methods with molecular ones can promote the specificity and sensitivity of both tests. Use of new techniques can provide early and accurate identification of etiologic agents, thereby, enhancing the diagnosis and management of the patients at risk of fungal infections.

Keywords:

Fungal infections, diagnostic methods, mannan, galactomannan, febrile neutropenic



Nosocomial infection type and its antibiotic sensitivity in the pediatric intensive care unit Mashhad University of medical science Mashhad Iran

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ARTICLE INFO

Keywords:

Nosocomial infection
Intensive care
Antibiotic Sensitivity

ABSTRACT

Introduction: Nosocomial infection is one of the important health problems of worldwide that can cause to death. These infections are common in pediatric hospital and neonatal intensive care unit. The most common infection related to urinary tract, pulmonary system and wound infection. Early antibiotics treatment in nosocomial infection has an important role that must be done properly and reasonably. So we decided to study nosocomial infection and early antibiotic therapy in these patients. We aimed to determine the most common infection related to the location and the most effective antibiotic at the beginning of treatment.

Materials and Methods: During one year, 2343 patients were hospitalized in Mashhad (Imam Reza hospital) that 811 (35.3%) of them were studied for nosocomial infections.

Results: From 811 cases, 15 cases (1.87%) had nosocomial infection. The most frequent cause of hospitalization was the loss of consciousness due to CNS problems. The highest incidence of nosocomial infection in PICU of Imam Reza hospital was occurred following intubation. Most patients with suspected nosocomial infection were treated with ceftriaxone while it is not effective and high percentage of ceftriaxone resistance has been reported. According to antibiograms obtained from patients with nosocomial infection, just the ceftazidime from the third generation of cephalosporin has been effective intermediately but we do not recommend it. In the cases suspected to nosocomial infection, it is better to use fourth generation of cephalosporin's (cefepime) with aminoglycosides (especially amikacin), tazobactam or carbapenem (imipenem, meropenem).

Conclusion: Nosocomial infection is inevitable, so the exact preventive methods can be somewhat controlled and the other way would be monitoring of antibiotic use, particularly in emergencies.



Catheter and dialysis infections in pediatric patients: prophylaxis, diagnosis and treatment

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Peritoneal dialysis (PD) continues to be an important modality of treatment for children with end-stage renal disease. Around 18% of the infection-related mortality in PD patients is the result of peritonitis. Although less than 4% of peritonitis episodes result in death, peritonitis is a “contributing factor” to death in 16% of deaths on PD. Peritonitis remains a major cause of patients discontinuing PD and switching to hemodialysis (HD). Therefore, the PD community continues to focus attention on prevention and treatment of PD-related infections.

Five sections of treatment of peritonitis include Reporting of peritonitis rate, Exit-site and tunnel infections, Initial presentation and management of peritonitis and Subsequent management of peritonitis (organism specific). The various definitions of catheter-related infections are reviewed, and various preventive strategies are discussed. Treatment options, for both empiric and definitive infections, including antibiotic locks and systemic antibiotics, are reviewed.

All patients using catheter should be closely monitored for evidence of infection, and if it is suspected, blood and/or exudate cultures should be promptly obtained. Every dialysis program should have an infection surveillance program with dedicated personnel and resources, to facilitate identification of catheter-related infections and timely interventions to reduce infection rates and improve patient clinical outcomes. The present commentary provides highlights of sections dealing with the management of dialysis catheter-related infections.

Keywords:

Tunneled catheter; catheter-related bacteremia; antimicrobial locks; catheter-related infection complications; hemodialysis; peritoneal dialysis



Comparison of the microorganisms isolated from the mobile of health care and non-health care workers

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ARTICLE INFO	ABSTRACT
<p>Keywords: Cell phone health care workers microorganisms</p>	<p>Introduction: Cell phone is a device that is now available to all people in the community, and research has shown that it carries tens of thousands of germs per square inch on it. The aim of this study was to identify the microorganisms carried on the mobile of the healthcare workers in comparison to normal population outside the hospitals.</p> <p>Materials and Methods: Samples were taken from the mobile of health care workers of Rasoul Akram Hospital, Tehran, Iran and ordinary people as negative controls. Sampling with sterile swabs was performed. The swabs were cultured on Blood Agar, MacConkey agar and Sabouraud Dextrose agar plates. Also, ordinary people were used as negative controls and all the announced procedures for sampling and cultivation were applied to the control group. The data obtained from the two groups were analyzed by statistical methods.</p> <p>Results: A total of 130 samples were collected in which 65 (50%) of the samples were from the hospital staff and 65 (50%) samples from the control group. Of the 65 samples taken from the mobile of the health care workers, 34 (52.3%) cases were positive, while, 3 (4.6%) cases were positive from the control group, which showed a significant difference (P value <0.001). A total of 37 microorganisms were isolated from which 34 (91.8%) were bacteria and the remaining 3 (8.2%) were fungi. Among isolated bacteria, <i>Staphylococcus aureus</i> and <i>Enterobacter aerogenes</i> were the most common gram-positive and gram-negative organisms isolated from the mobile of health care workers, and <i>Staphylococcus epidermidis</i>, <i>Bacillus</i> spp and <i>Diphtheroid</i> were isolated from the mobile phones of the control group.</p> <p>Conclusion: The cell phones could be a source of transmission of microorganisms in the hospital settings leading to nosocomial infections.</p>