Welcome to this edition of Infection Prevention & Control Update.

The aims of this publication are:

- To bring together a range of recently-published research reports, articles and electronic resources to help Infection Control professionals keep up-to-date with developments.
- To remind readers of IP&C Update of the services available from the Library & Knowledge Service – we can supply you with 1:1 or small group training in evidence searching skills; obtain full-text articles for you; or provide an evidence search service for you to help you with your research tasks.
- To respond to your information needs – if you have any suggestions on the type of information or sources you would find helpful in future editions of IP&C Update, then please let us know – contact details are below.

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Healthcare Databases – Articles found in Medline and British Nursing Index (BNI) databases

The articles selected below have been published September 2018 – February 2019

Items are ordered with the most recent first. Follow blue hyperlinks (in the abstracts) to access full text where available.

1. Phenotypic and genotypic determinants of mupirocin resistance among staphylococcus aureus isolates recovered from clinical samples of children: An Iranian hospital-based study

2. An outbreak of vanA vancomycin-resistant Enterococcus faecium in a hospital with endemic vanB VRE

3. Control of hospital acquired infections and antimicrobial resistance in Europe: the way to go

4. Antimicrobial resistance local data in sepsis

5. Planning to halve Gram-negative bloodstream infection: getting to grips with healthcare-associated Escherichia coli bloodstream infection sources


7. Prosthetic infections and high-risk surgical populations

8. Common uropathogens and their antibiotic susceptibility pattern among diabetic patients

9. Two-stage approach to total knee arthroplasty using colistin-loaded articulating cement spacer for vancomycin-resistant Pseudomonas aeruginosa infection in an arthritic knee

10. Infectious Disease: Health Care-Associated Infections

11. Enhanced topical delivery of non-complexed molecular iodine for Methicillin-resistant Staphylococcus aureus decolonization

12. Ambulatory Care Nurses' Role in Recognizing and Preventing Clostridium Difficile Infection

13. Essential practice for infection prevention and control: RCN guidance for nursing staff, 3

14. Extended-spectrum beta-lactamase detection by extended-spectrum beta-lactamase-nordmann/dortet/poirel test: Where time is the essence

15. Infection control measures to prevent hospital transmission of candida.

16. Unexpected detection of VRE as a consequence of enhanced cre screening

17. Effect of copper-impregnated composite bed linens and patient gowns on healthcare-associated infection rates in six hospitals.

18. Characterizations of handwashing sink activities in a single hospital medical intensive care unit.

19. NEWS BRIEFS
20. Single dose cefazolin is safe and effective for pre-operative prophylaxis in orthopaedic oncology.

21. Gram stain-guided Antibiotics Choice for Ventilator-Associated Pneumonia (GRACE-VAP) trial: Rationale and study protocol for a randomised controlled trial. 11 Medical and Health Sciences 1103 Clinical Sciences.


23. Japan nosocomial infections surveillance (JANIS): a model of sustainable national antimicrobial resistance surveillance based on hospital diagnostic microbiology laboratories.


25. Colonization with Multidrug-Resistant Enterobacteriaceae is Associated with Increased Mortality Following Burn Injury in Sub-Saharan Africa.


28. Implementation and outcomes of hospital-wide computerized antimicrobial approval system and on-the-spot education in a traumatic intensive care unit in Taiwan.

29. Community-acquired bloodstream infections caused by Acinetobacter baumannii: A matched case-control study.


33. Carbapenemase-producing Enterobacteriaceae isolates resistant to last-line antibiotics in an Italian general hospital.

34. The Use of Liquids Ionic Fluids as Pharmaceutically Active Substances Helpful in Combating Nosocomial Infections Induced by Klebsiella Pneumoniae New Delhi Strain, Acinetobacter Baumannii and Enterococcus Species.
35. Prevention of surgical site infection via antibiotic administration according to guidelines after gynecological surgery.

36. Risk factors for fecal carriage of IMP-6-producing Enterobacteriaceae at a long-term care hospital in Japan: A follow-up report from the northern Osaka multicentre study group.


38. Changes in bacterial hospital epidemiology

39. [Analysis of antimicrobial resistance and risk factors of community-onset methicillin-resistant staphylococcus aureus infection].

40. Epidemiological evaluation of an Acinetobacter baumannii outbreak observed at an intensive care unit.

41. Decontaminating surfaces with atomized disinfectants generated by a novel thickness-mode lithium niobate device.

42. Investigating the impact of poverty on colonization and infection with drug-resistant organisms in humans: A systematic review
1. Phenotypic and genotypic determinants of mupirocin resistance among staphylococcus aureus isolates recovered from clinical samples of children: An Iranian hospital-based study

**Author(s):** Mahmoudi S.; Mamishi S.; Banar M.; Pourakbari B.; Mohammadi M.; Mahzari M.; Ashtiani M.T.H.; Bahador A.

**Source:** Infection and Drug Resistance; 2019; vol. 12 ; p. 137-143

**Publication Date:** 2019

**Publication Type(s):** Article

**Available at Infection and Drug Resistance - from Europe PubMed Central - Open Access**

**Abstract:** Backgrounds: The aim of this study was to evaluate both phenotypic and genotypic determinants of mupirocin resistance among methicillin-resistant Staphylococcus aureus (MRSA) and methicillin susceptible S. aureus (MSSA) strains recovered from different clinical samples of children who were admitted to the Children's Medical Center (CMC) Hospital, Tehran, Iran.

Material(s) and Method(s): A total of 120 clinical isolates of S. aureus were collected from the microbiology laboratory of CMC Hospital. Antimicrobial susceptibility of the isolates to different antimicrobial agents was determined by disk diffusion method. The methicillin resistance phenotype (MRSA) was identified using a 30 micro g cefoxitin disk. The minimum inhibitory concentration (MIC) of mupirocin was determined by broth microdilution method. Strains with mupirocin MIC between 8 and 256 micro g/mL were considered as low-level mupirocin resistant (LLMR), and strains with an MIC>=512 micro g/mL were considered as high-level mupirocin resistant (HLMR). The presence of genes encoding HLMR (ie, mupA and mupB genes) was evaluated by PCR method.

Result(s): Four out of 120 isolates (3%) had mupirocin MIC>=512 micro g/mL and were HLMR; however, no LLMR isolate was detected. Fifty-two isolates (43%) were MRSA, and there were no differences in the distribution of mupirocin resistance among MRSA and MSSA isolates (P>0.05). The PCR method identified mupA gene in two out of four HLMR isolates, and mupB gene was not detected in any HLMR isolates.

Conclusion(s): Because of discrepancies between the phenotypic and genotypic patterns of mupirocin resistance and due to the avoidance of false-negative results, it is better to determine the mupirocin resistance by both antibiotic susceptibility tests and PCR method. Considering the increasing need of mupirocin for the control of S. aureus infections, continuous checking of its susceptibility status is necessary.

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**Database:** EMBASE

2. An outbreak of vanA vancomycin-resistant Enterococcus faecium in a hospital with endemic vanB VRE

**Author(s):** Hughes A.; Ballard S.; Sullivan S.; Marshall C.

**Source:** Infection, Disease and Health; 2019

**Publication Date:** 2019

**Publication Type(s):** Article In Press

**Abstract:** Background: In Australia, vanB vancomycin-resistant Enterococcus faecium (VREfm) has been endemic for over 20 years, but vanA VREfm isolates have rarely been reported.

Method(s): This outbreak report describes an outbreak of vanA VREfm in the intensive care unit (ICU) and cardiothoracic surgery (CTS) wards of a Melbourne hospital in 2015-2016. After the cluster was initially identified in the ICU ward, an active screening programme was implemented. VRE
isolates were typed using in silico multi-locus sequence typing. In addition, to screening, enhanced environmental cleaning, chlorhexidine gluconate body washes, and standardisation of the surgical antibiotic prophylaxis regimen were implemented to control the outbreak.

**Result(s):** There were 83 new isolates of vanA VREfm recovered from patients in the ICU (n = 31) and CTS (n = 52) wards. Screening identified 78 (94%) of cases. Three patients required treatment for clinical infection with vanA VREfm during the outbreak. The outbreak was polyclonal with 5 different multilocus sequence types carrying the vanA gene (ST17, ST80, ST203, ST252 and ST1421) detected from a subset of isolates (N = 43). The ST17 isolates all carried both the vanA and vanB gene. The intervention bundle resulted in control of the outbreak after 10 months.

**Conclusion(s):** Geographically, vanA VREfm has previously been uncommon in the region and this outbreak represents a change in local epidemiology. Few VRE outbreaks have been reported in CTS patients. The infection control responses controlled the outbreak within 10-months and may help guide future management of outbreaks.

**Database:** EMBASE

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**3. Control of hospital acquired infections and antimicrobial resistance in Europe: the way to go**

**Author(s):** Friedrich A.W.

**Source:** Wiener Medizinische Wochenschrift; 2019

**Publication Date:** 2019

**Publication Type(s):** Article In Press

**Abstract:** One of the major challenges for modern medicine is our ageing society and an increased level of immunocompromised hosts. More invasive and intensive medical interventions will increase the number of healthcare-associated infections (HCAI), which means infection that occur because of or in concomitance, but in any case, during or after healthcare interventions. Such infections are caused usually endogenously from microbial components of the patient's own microbiome. Usually, the microorganisms of the microbiome show a natural resistance against a few antibiotics. Due to selection processes and epidemic transmission of specific clones, microorganisms that have become resistant to multiple antibiotics become part of the patient's microbiome and can subsequently cause infections that are difficult or even impossible to treat. The kind of infections that will occur depends on diverse factors. Already today, according to Cassini et al., 2,609,911 new cases of HCAI occur every year in the European Union and European Economic Area (EU/EEA). The cumulative burden of the six HAIs was estimated at 501 disability-adjusted life years (DALYs) per 100,000 general population each year in the EU/EEA. In a recent publication, 426,277 healthcare-associated infections caused by antimicrobial resistant microorganisms were calculated to occur in the EU every year. Attributable deaths in the EU due to antimicrobial resistant microorganisms were estimated to be 33,110 per year. We know that we cannot prevent all HCAI. Because medical innovations will allow for an increased number of novel treatments that will comprise abiotic materials, microorganisms will adapt to this environment and enhance the risk for new HCAI. The challenge for the future will not be to try to prevent all infections, as some of them will remain unavoidable, but to prevent the occurrence of non-treatable microorganisms that would make unavoidable infections additionally untreatable. That means that we need to reflect on how we organize infection prevention, diagnostics and control. While patients with classical infectious diseases present with infectious diseases (ID)-specific symptoms, patients with HCAI present usually with another underlying disease. HCAI are therefore perceived as a secondary damage not following classical clinical and epidemiological rules. However, more recently we have to consider how we should react to HCAI and antimicrobial resistance (AMR) as they are quite different in epidemiology and transmission behavior than classical infectious diseases. Today, the prevalence of AMR is rising all over Europe. Although good success has been seen in many countries, methicillin-resistant
Staphylococcus aureus (MRSA) remains an important challenge for many countries. In addition to MRSA, multidrug-resistant Escherichia coli and carbapenem-resistant Enterobacteriaceae are becoming a problem of public health importance. Furthermore, we need to focus more on implementation of known infection prevention measures than trying to solve the problem by observing and describing it. However, in addition to medical factors such as antibiotic use, hand hygiene etc., we tend to forget that there are factors behind these factors that have a major influence and are found in the structures of our different healthcare systems. We need to look more at the context before we try to implement prevention measures and need to learn from each other. A common goal to tackle carbapenem-resistant Enterobacteriaceae (CRE) by 2030 would be an important step to foster collaboration across Europe. As the current funding and remuneration system does not sufficiently support prevention of HCAI and AMR, it is time for the development of a less production- but more prevention-economic financing system for clinical microbiology and infection control.

**Database:** EMBASE

4. **Antimicrobial resistance local data in sepsis**

**Author(s):** Ginting F.; Barimbing M.L.; Ginting N.M.

**Source:** International Journal of Infectious Diseases; Feb 2019; vol. 79 ; p. 53

**Publication Date:** Feb 2019

**Publication Type(s):** Conference Abstract

**Abstract:** Purpose: Antimicrobial resistance (AMR) is one of the life-threatening world problems which should be noticed and controlled seriously. One of the major causes of the increasing AMR is the inappropriate use of antimicrobial where antimicrobial choices should be based on local data pattern to select the proper antibiotic. Sepsis causes high mortality and needs appropriate antibiotic while antimicrobial treatment should be started as soon as sepsis is suspected to prevent the development of further complications and progression. The aim of the study is to find the AMR prevalence, the causal bacteria in sepsis adult can be used as antibiotic guidelines for sepsis.

**Methods & Materials:** Retrospective study of all of the sepsis patient from medical report data and hospital information system (HIS) in 2016, which in total are 962 cases in Adam Malik tertiary Hospital in Medan, Indonesia. Diagnosis of sepsis was by using the surviving sepsis campaign (SSC) 2012. 91 cases (paediatrics) and 314 cases (no correlation with SSC criteria) were excluded. Finally, 535 sepsis patient data were evaluated and analyzed with STATA version 12.2.

**Result(s):** The most aetiology diagnosis of sepsis were: pneumonia (70,84%), urinary tract infection (10,28%), intra-abdominal infection (4,11%), and skin soft tissue infection (3,93%). The gram-negative bacteria was the most common bacteria from the culture both in ICU (73,7%) and non-ICU (72,7%), which were Acinetobacter baumanii (26,6%), Klebsiella pneumonia (22,8%), and Escherichia coli (18,8%). The gram-positive bacteria were Staphylococcus sp. (54,2%), Enterococcus sp. (33,6%), and Streptococcus sp. (8,4%). AMR for sepsis patient in non-ICU for gram-negative bacteria were amikasin (19,1%), meropenem (30,6%), and Cefoperazone sulbactam (33,5%) while for gram-positive bacteria was only vancomycin with the resistance level below 20% (18,3%). In the ICU patients, the AMR prevalence was higher than the non-ICU.

**Conclusion(s):** AMR in sepsis patients is very high in Indonesia. It needs local data as guidelines for empirical treatment that can reduce the inappropriate use of antibiotic in an effort to control the AMR from spreading and increasing.

**Database:** EMBASE
5. Planning to halve Gram-negative bloodstream infection: getting to grips with healthcare-associated Escherichia coli bloodstream infection sources

**Author(s):** Otter J.A.; Galletly T.J.; Davies F.; Holmes A.H.; Brannigan E.T.; Hitchcock J.; Gilchrist M.J.; Dyakova E.; Mookerjee S.

**Source:** Journal of Hospital Infection; Feb 2019; vol. 101 (no. 2); p. 129-133

**Publication Date:** Feb 2019

**Publication Type(s):** Article

**PubMedID:** 30059746

**Abstract:**

**Background:** A thorough understanding of the local sources, risks, and antibiotic resistance for Escherichia coli bloodstream infection (BSI) is required to focus prevention initiatives and therapy.

**Aim(s):** To review the sources and antibiotic resistance of healthcare-associated E. coli BSI.

**Method(s):** Sources and antibiotic resistance profiles of all 250 healthcare-associated (post 48 h) E. coli BSIs that occurred within our secondary and tertiary care hospital group from April 2014 to March 2017 were reviewed. Epidemiological associations with urinary source, gastrointestinal source, and febrile neutropenia-related BSIs were analysed using univariable and multivariable binary logistic regression models.

**Finding(s):** E. coli BSIs increased 9% from 4.0 to 4.4 per 10,000 admissions comparing the 2014/15 and 2016/17 financial years. Eighty-nine cases (36%) had a urinary source; 30 (34%) of these were classified as urinary catheter-associated urinary tract infections (UTIs). Forty-five (18%) were related to febrile neutropenia, and 38 (15%) had a gastrointestinal source. Cases were rarely associated with surgical procedures (11, 4%) or indwelling vascular devices (seven, 3%). Female gender (odds ratio: 2.3; 95% confidence interval: 1.2-4.6) and older age (1.02; 1.00-1.05) were significantly associated with a urinary source. No significant associations were identified for gastrointestinal source or febrile neutropenia-related BSIs. Forty-seven percent of the isolates were resistant to ciprofloxacin, 37% to third-generation cephalosporins, and 22% to gentamicin.

**Conclusion(s):** The gastrointestinal tract and febrile neutropenia together accounted for one-third of E. coli BSI locally but were rare associations nationally. These sources need to be targeted locally to reduce an increasing trend of E. coli BSIs.

**Database:** EMBASE


**Author(s):** Blandy O.; Honeyford K.; Gharbi M.; Thomas A.; Ramzan F.; Holmes A.H.; Johnson A.P.; Aylin P.; Woodford N.; Sriskandan S.; Ellington M.J.; Hope R.

**Source:** Journal of Hospital Infection; Feb 2019; vol. 101 (no. 2); p. 120-128

**Publication Date:** Feb 2019

**Publication Type(s):** Article

**PubMedID:** 30403958

**Abstract:**

**Background:** The incidence of Escherichia coli bacteraemia in England is increasing amid concern regarding the roles of antimicrobial resistance and nosocomial acquisition on burden of disease. Aim(s): To determine the relative contributions of hospital-onset E. coli bloodstream infection and specific E. coli antimicrobial resistance patterns to the burden and severity of E. coli bacteraemia in West London.
Method(s): Patient and antimicrobial susceptibility data were collected for all cases of E. coli bacteraemia between 2011 and 2015. Multivariable logistic regression was used to determine the association between the category of infection (hospital or community-onset) and length of stay, intensive care unit admission, and 30-day all-cause mortality.

Finding(s): E. coli bacteraemia incidence increased by 76% during the study period, predominantly due to community-onset cases. Resistance to quinolones, third-generation cephalosporins, and aminoglycosides also increased over the study period, occurring in both community- and hospital-onset cases. Hospital-onset and non-susceptibility to either quinolones or third-generation cephalosporins were significant risk factors for prolonged length of stay, as was older age. Rates of mortality were 7% and 12% at 7 and 30 days, respectively. Older age, a higher comorbidity score, and bacteraemia caused by strains resistant to three antibiotic classes were all significant risk factors for mortality at 30 days.

Conclusion(s): Multidrug resistance, increased age, and comorbidities were the main drivers of adverse outcome. The rise in E. coli bacteraemia was predominantly driven by community-onset infections, and initiatives to prevent community-onset cases should be a major focus to reduce the quantitative burden of E. coli infection.

Database: EMBASE

7. Prosthetic infections and high-risk surgical populations

Author(s): Hitchman L.H.; Smith G.E.; Chetter I.C.
Source: Surgery (United Kingdom); Jan 2019; vol. 37 (no. 1); p. 38-44
Publication Date: Jan 2019
Publication Type(s): Review
Abstract: Surgical site infection is one of the most common healthcare-associated infections in the UK, leading to high patient mortality, morbidity and healthcare costs. The presence of a prosthetic material further complicates treatment. Prosthetic-related infections most commonly arise from opportunist skin flora, Staphylococcus epidermis and Staphylococcus aureus, and are challenging to diagnose and treat due to biofilm formation. Current management is tailored antibiotic regimes and debridement, however in resistant cases, prosthetic removal is required. New technology into biofilm-resistant prosthetic surfaces hopes to reduce the incidence of infection. As advances in surgical care continue, surgery in patients with immunodeficiency becomes more common. This cohort have an increased risk of infection, therefore patient optimization and multidisciplinary approach to care is vital to prevent infection.

Database: EMBASE

8. Common uropathogens and their antibiotic susceptibility pattern among diabetic patients

Author(s): Woldemariam H.K.; Aber N.A.; Geleta D.A.; Tulu K.D.; Legese M.H.; Ali I.; Fenta G.M.
Source: BMC Infectious Diseases; Jan 2019; vol. 19 (no. 1)
Publication Date: Jan 2019
Publication Type(s): Article
PubMedID: 30630427
Available at BMC Infectious Diseases - from ProQuest (Hospital Premium Collection) - NHS Version
Available at BMC Infectious Diseases - from BioMed Central
Available at BMC Infectious Diseases - from Europe PubMed Central - Open Access
Abstract: Background: Urinary tract infection (UTIs) is a significant health problem in diabetic patients because of the multiple effects of this disease on the urinary tract and host immune system. Complicated UTIs occur most commonly in patients with abnormal genitourinary tract. Proper investigation and prompt treatment are needed to prevent morbidity and serious life threatening condition associated with UTI and diabetes co-morbidities.

Objective(s): To determine common uropathogens and antibiotic susceptibility patterns with associated risk factors among adult diabetic patients attending at St. Paul Specialized Hospital Millennium Medical College, Addis Ababa, Ethiopia.

Method(s): A hospital based, cross-sectional study was conducted from April-July 2015. A total of 248 diabetic patients with asymptomatic and symptomatic UTI were investigated for common uropathogens. Clean catch mid-stream urine specimens were collected from each study subjects. Uropathogens were isolated and identified by using conventional standard techniques. Samples were cultured on Blood agar, MacConkey agar and Sabouraud Dextrose Agar. Antibiotic Susceptibility pattern was determined on Mueller-Hinton using Kirby-Bauer disc diffusion method. The collected data and the result of the laboratory were analyzed using SPSS version 20.

Result(s): The overall prevalence of uropathogens among diabetic patients was 56/248(22.6%) of which 21/177(11.9%) and 35/71(49.3%) had asymptomatic and symptomatic UTI respectively. E. coli 13/56(23.2%), Coagulase negative Staphylococci (CONs) 7/56(12.5%), Enterococcus Spp.6/56 (10.7%), Candida albicans 10/56(17.9%) and Non-albicans Candida Spp. 9/56(16.1%) were the commonest isolated uropathogens. In this study uropathogens were significantly associated with being type II diabetes patient and having previous UTI history. Both gram positive and gram negative bacteria showed resistance to most tested antibiotics. Drug resistance to two or more drugs was observed in 81.1% of bacterial isolates.

Conclusion(s): High prevalence of uropathogens and increased rate of Multi-drug resistance was shown in this study. Therefore, continued surveillance on uropathogens prevalence and resistance rates is needed to ensure appropriate recommendations for the empirical treatment, develop rational prescription programs and make policy decisions. Copyright © 2019 The Author(s).

Database: EMBASE

9. Two-stage approach to total knee arthroplasty using colistin-loaded articulating cement spacer for vancomycin-resistant Pseudomonas aeruginosa infection in an arthritic knee

Author(s): Chang M.J.; Song M.K.; Shin J.H.; Yoon C.; Chang C.B.; Kang S.-B.

Source: European Journal of Orthopaedic Surgery and Traumatology; Jan 2019; vol. 29 (no. 1); p. 227-230

Publication Date: Jan 2019

Publication Type(s): Review

Abstract: Background: A two-stage approach to total knee arthroplasty (TKA) using an antibiotic-impregnated articulating cement spacer is an option for an infected arthritic knee. Vancomycin combined with broad-spectrum antibiotics can be used to make an antibiotic-impregnated articulating cement spacer. Causative organisms are sometimes not confirmed before surgery. Joint infections of multidrug-resistant organisms are increasing. Therefore, routine combinations of antibiotics may not be effective.

Methods and Results: We present a case of a patient who developed vancomycin-resistant Pseudomonas aeruginosa infection in an arthritic knee. A 71-year-old man was initially diagnosed with pyogenic arthritis caused by Staphylococcus aureus. He underwent arthroscopic debridement elsewhere. However, the infection persisted. He was referred to our hospital, and we performed a
two-stage TKA using a vancomycin-based antibiotic-impregnated articulating cement spacer. Vancomycin-resistant P. aeruginosa was identified after surgery. Intravenous colistin was added. However, this failed, either because vancomycin was not effective against P. aeruginosa, or because insufficient systemic colistin due to colistin-induced acute kidney injury. Therefore, debridement was repeated, and colistin-loaded cement spacer was inserted. The spacer delivered high concentrations of colistin to the infected joint with decreased systemic effects. Thus, less systemic colistin was used. The infection was controlled without recurrent acute kidney injury. One year after surgery, conversion to TKA was successfully performed.

**Conclusion(s):** A two-stage approach to TKA using a colistin-loaded articulating cement spacer can be used for an arthritic knee infected by vancomycin-resistant P. aeruginosa. Furthermore, local administration of colistin using a cement spacer can reduce the systemic side effects of colistin. COPYRIGHT © 2018, SPRINGER-VERLAG FRANCE SAS, PART OF SPRINGER NATURE.

**Database:** EMBASE

10. Infectious Disease: Health Care-Associated Infections

**Author(s):** Shafer C.W.; Allison J.R.; Hogue A.L.; Huntington M.K.

**Source:** FP essentials; Jan 2019; vol. 476 ; p. 30-42

**Publication Date:** Jan 2019

**Publication Type(s):** Article

**PubMedID:** 30615408

**Abstract:** Health care-associated infections (HAIs) are a major cause of morbidity and mortality, with 2 million US patients per year developing HAIs. This results in 90,000 deaths and billions of dollars in preventable expenses annually. Common HAIs include central line-associated bloodstream infection, catheter-related urinary tract infection, surgical site infection, hospital-acquired pneumonia (HAP), ventilator-associated pneumonia (VAP), methicillin-resistant Staphylococcus aureus (MRSA) infection, Clostridium difficile infection (CDI), and others. Many factors contribute to HAIs, including inadequate hand hygiene by health care workers, inappropriate antibiotic use, increasing prevalence of multidrug-resistant organisms (MDROs), suboptimal disinfection and cleaning of hospital rooms and equipment, and use of invasive medical devices. HAP and VAP together represent the most common HAIs. Control of HAIs involves high- and low-tech solutions, including pulsed xenon light as a room disinfection adjunct, improving health care worker adherence to hand hygiene and standard precautions, as well as regular cleaning of cell phones and stethoscopes. Antibiotic stewardship programs have been shown to reduce inappropriate prescribing of antibiotics, a significant contributor to MDROs and CDI. Bundled interventions to control MRSA and CDI have been effective. Artificial intelligence applications likely will be involved in identification of patients at risk of HAIs in the future. Copyright Written permission from the American Academy of Family Physicians is required for reproduction of this material in whole or in part in any form or medium.

**Database:** EMBASE

11. Enhanced topical delivery of non-complexed molecular iodine for Methicillin-resistant Staphylococcus aureus decolonization

**Author(s):** Uchiyama S.; Dahesh S.; Nizet V.; Kessler J.

**Source:** International Journal of Pharmaceutics; Jan 2019; vol. 554 ; p. 81-86

**Publication Date:** Jan 2019

**Publication Type(s):** Article
**PubMedID:** 30395958

**Abstract:** Staphylococcus aureus, a leading cause of serious human infections in both healthcare and community settings, is increasingly difficult to control due to expanding resistance to multiple antibiotic classes. Methicillin-resistant S. aureus (MRSA) strains have disseminated on a global scale and are associated with adverse patient outcomes, increased hospital stays, and significant economic costs to the healthcare system. A proximal step in S. aureus infection is colonization of the nasal mucosa, and effective strategies to decolonize high risk patients to reduce the risk of invasive infection and nosocomial spread represent an important clinical priority. With rising resistance to mupirocin, the most common antibiotic utilized for nasal MRSA decontamination, we are examining the use of pure molecular iodine (I2)-based formulations for this indication. Recently, an iodophor formulation of povidone-iodine (PVP-I) has shown significant promise for nasal MRSA decontamination by swabbing the anterior nares of patients in hospital settings, but the I2 concentration in this treatment is less than 0.01% of total iodine species present and like all providone-iodine formulations causes skin staining. Here we determine that a novel non-staining formulation of I2 combined with the safe organic emollient glycerin delivers high local concentrations of the active antimicrobial entity (I2) with minimal evaporative loss, exhibits activity at ~1 part per million against MRSA and other important Gram-positive and -negative human pathogens. This formulation for I2 topical delivery produced similar reductions in mean bacterial burden and was associated with fewer treatment failures (<2-logfold reduction) than PVP-I in a murine model of MRSA nasal decontamination. Formulations of I2 in glycerin emollient merit further exploration as topical disinfectants for human medical indications. Copyright © 2018 Elsevier B.V.

**Database:** EMBASE

12. Ambulatory Care Nurses’ Role in Recognizing and Preventing Clostridium Difficile Infection

**Author(s):** Eilertsen, Amy B

**Source:** AAACN Viewpoint; 2018; vol. 40 (no. 5); p. 10

**Publication Date:** 2018

**Publication Type(s):** Journal Article

**Abstract:** Exposure to outpatient health care settings contaminated with spores is a likely risk factor of CA-CDI, as two-thirds of people diagnosed with the disease had visited health care settings such as ambulatory care clinics or emergency rooms in the 12 weeks preceding the infection (Gupta & Khanna, 2014). Personal communication with Preeta Kutty MD, MPH, CDI, expert from the CDC, 2018 A joint white paper authored by the American Nurses Association (ANA) and the CDC, Redefining Antibiotic Stewardship (ANA, 2017), addresses antibiotic usage as a patient safety issue, as overuse of antibiotics has helped bacteria develop resistance, and antibiotic use can alter a patient’s natural bacterial balance and increase risk for CDI. Antibiotic stewardship, defined as “coordinated interventions designed to improve and measure the appropriate use of [antibiotic] agents” (ANA, 2017, p. 3) is demonstrated by the ambulatory care nurse through: * Monitoring the patient’s response to antibiotics and reporting adverse events * Educating patients regarding disease processes and treatments * Initiating appropriate infection control measures (ANA, 2017) Monitoring for and reporting signs and symptoms of CACDI in patients on antibiotic therapy is essential. Clinical practice guidelines for clostridium difficile infection in adults and children: 2017 update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA).

**Database:** BNI
13. Essential practice for infection prevention and control: RCN guidance for nursing staff, 3

**Author(s):** Sunley, Kim; Gallagher, Rose; Reidy, Pelagia; Dunn, Helen

**Source:** British Journal of Healthcare Assistants; 2018; vol. 12 (no. 2); p. 72

**Publication Date:** 2018

**Publication Type(s):** Journal Article

**Abstract:** Many microorganisms can be identified from patients’ environments and these usually reflect bacteria carried by patients or staff (for example, as with Staphylococcus aureus). Contact with the immediate patient or a contaminated environment by the hands of staff can also be a route for transmission of microorganisms. High standards of cleanliness will help to reduce the risk of cross-infection and are aesthetically pleasing to patients and the public... All nurses, midwives and healthcare assistants have a responsibility to be aware of their local cleaning specification to ensure that any issues are highlighted immediately should they occur.

**Database:** BNI

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14. Extended-spectrum beta-lactamase detection by extended-spectrum beta-lactamase-nordmann/dortet/poirel test: Where time is the essence

**Author(s):** Kumar S.; Bandyopadhyay M.; Kumari P.; Sengupta A.; Das S.; Mukhopadhyay P.K.; Chatterjee M.

**Source:** JMS - Journal of Medical Society; 2018; vol. 32 (no. 2); p. 140-143

**Publication Date:** 2018

**Publication Type(s):** Article

**Abstract:** Background: Extended-spectrum beta-lactamase (ESBL)-producing strains are causing an increasing problem worldwide. Infection control is most effective when ESBL strains are detected by rapid, sensitive, and specific tests and an early implementation of appropriate antibiotic therapy is initiated. Recently, a rapid and cost-effective biochemical test for the detection of ESBL, the ESBL Nordmann/Dortet/Poirel (NDP) test, has been implemented.

**Aim(s):** The aim of the study was to detect ESBL by a rapid NDP test. Settings and Design: The prospective study was conducted in the Department of Microbiology at a tertiary care hospital.

**Material(s) and Method(s):** A total of 208 isolates were subjected to the ESBL NDP test. Simultaneously, these isolates were also tested for ESBL production by double-disc synergy test (DDST) method. The ESBL NDP test was also used directly with spiked blood cultures inoculated with ESBL producers and non-ESBL producers. Statistical Analysis Used: Descriptive statistics such as mean and ratio are used for the interpretation of the study. Result(s): Using the ESBL NDP test, 80 of 208 (40%) of the tested isolates produced ESBL, among which Escherichia coli were 56 (70%) and Klebsiella pneumonia were 24 (30%) which showed positive result. Our results, done directly on clinical isolates as well as on spiked blood cultures inoculated with them, showed a perfect correlation between the ESBL NDP test and DDST in detecting ESBLs.

**Conclusion(s):** This inexpensive ESBL NDP test might be implemented worldwide, especially in resource-limited settings of developing countries to optimize rapid choices of antibiotics for treating severe infections and avoidance of overuse of carbapenems.

**Database:** EMBASE
15. Infection control measures to prevent hospital transmission of candida.

Author(s): Ture, Zeynep; Alp, Emine

Source: Hospital practice (1995); Dec 2018; vol. 46 (no. 5); p. 253-257

Publication Date: Dec 2018

Publication Type(s): Journal Article Review

PubMedID: 30102587

Abstract: Invasive candida infections are the most important causes of nosocomial infections in intensive care units and in risky groups such as immunosuppressed patients. These infections lead to undesirable consequences such as increased morbidity and mortality in patients, prolongation of hospital stay, and increased hospital costs. In recent years, the incidence of non-albicans Candida spp.'s has increased. Unfortunately, some of these species are naturally resistant to first-line antifungals. In addition, biofilm formation on the central venous catheter and invasive devices may cause treatment failure. The age of the patients, co-morbid diseases, the units where they are treated, the antibiotics and antifungals that are used for the treatment, and invasive devices are risk factors for invasive candida infections. Some of these risk factors can be reduced by the behavior of health-care workers. The most important goal is to take precautions before the occurrence of invasive candida infections. Infection control measures to prevent hospital transmission of candida are very important. Compliance with hand hygiene before and after contact with the patient is the most important step to prevent the spreading of Candida spp. Observation of maximal barrier precautions during invasive catheterization is another important clause of this aim. Avoiding unnecessary invasive devices, antibiotics, and parenteral nutrition are also important to reduce the colonization of candida.

Database: Medline

16. Unexpected detection of VRE as a consequence of enhanced cre screening

Author(s): Yongblah F.; O'Sullivan A.; Guiver J.; Cloutman-Green E.; Hartley J.

Source: Archives of Disease in Childhood; Dec 2018; vol. 103

Publication Date: Dec 2018

Publication Type(s): Conference Abstract

Available at Archives of Disease in Childhood - from BMJ

Abstract: Background: Great Ormond Street Hospital is a tertiary paediatric centre with 268 000 patient visits per year from a global patient demographic. Within paediatric patients, infection with Vancomycin Resistant Enterococci (VRE) has always been uncommon. Detection of colonisation of patients with VRE has also been considered to be uncommon with only 26 cases over the last 3 years. In 2015 the laboratory-modified screening protocol for admission stools to enable enhanced screening for Carbapenemase Resistant Enterobacteriaceae (CRE) to include the use of CARBA SMART agar (Biomerieux). It was noticed by laboratory staff that enterococci were coming through and because of interest in January 2017 an isolate was followed up and shown to be a VRE. Further enterococcal growths were investigated.

Aim: To investigate whether VRE detected in these patients represents higher than expected ‘out-of-GOSH’ colonisation or arose from an unrecognised hospital outbreak Method 1500 stools screened. 30 patients have now been shown to be positive for VRE over 3 month period, and 20 isolates have been referred for typing by Pulse Field Gel Electrophoresis (PFGE). Results 3 of the patient isolates from haematology/oncology ward were linked by PFGE analysis, and 2 further cases were determined to be linked on a cardiac ward. Epidemiological investigation showed a possible link. The
remaining 15 were demonstrated to have unique PFGE profiles and were not considered to be linked to possible transmission events at GOSH.

**Conclusion**

1. Intellectual curiosity demonstrated that modification of CRE screening methodologies could be used for detection of VRE.
2. Levels of colonisation within paediatric patient populations are higher than previously thought.
3. Systematic screening with specific detection methodologies (CARBA SMART is not designed for this purpose) may be needed to investigate the level of VRE colonisation in children attending the paediatric tertiary centre for infection prevention control and empirical antibiotic policy developments.

**Database:** EMBASE

**17. Effect of copper-impregnated composite bed linens and patient gowns on healthcare-associated infection rates in six hospitals.**

**Author(s):** Butler, J P

**Source:** The Journal of hospital infection; Nov 2018; vol. 100 (no. 3); p. e130

**Publication Date:** Nov 2018

**Publication Type(s):** Journal Article

**PubMedID:** 29803808

**Abstract:** BACKGROUND: Hospital linens and patient gowns are frequently touched and contaminated, and may contribute to endogenous, indirect-contact, and aerosol transmission of nosocomial-related pathogens. Recently Sentara Healthcare adopted biocidal copper oxide-impregnated linens across its hospitals.

**AIM:** To assess whether the replacement of the linens resulted in the reduction of healthcare-associated infection (HCAI).

**METHODS:** Rates of HCAI caused by Clostridium difficile and multidrug-resistant organisms (MDROs) were compared in six Sentara Healthcare hospitals with similar patient demo-graphics (total of 1019 beds) in three parallel periods (90, 180 and 240 days) before and after (periods A1, A2 and A3, and periods B1, B2, and B3, respectively), replacing all the regular non-biocidal linens with the copper oxide-impregnated biocidal linens.

**FINDINGS:** During periods B1, B2, and B3, compared with periods A1, A2 and A3, there were 61.2% (P < 0.05), 41.1% (P < 0.05) and 42.9% (P < 0.05), 36.4% (P > 0.05), and 19.2% (P > 0.05) reductions in HCAI per 1000 patient-days caused by MDROs; and 59.8% (P < 0.01), 39.9% (P < 0.05), and 37.2% (P < 0.05) in the reduction of HCAI per 1000 patient-days caused by C. difficile and MDROs combined.

**CONCLUSION:** The use of biocidal copper oxide-impregnated linens in the six analysed Sentara Healthcare hospitals resulted in significant reduction in both HCAI caused by C. difficile, and the combined metric of C. difficile or MDRO infection. Similar reductions in HCAI caused by MDROs were observed, although these reductions did not reach statistical significance, probably due to very low HCAI rates caused by these pathogens in the study facilities.

**Database:** Medline

**18. Characterizations of handwashing sink activities in a single hospital medical intensive care unit.**

**Author(s):** Grabowski, M; Lobo, J M; Gunnell, B; Enfield, K; Carpenter, R; Barnes, L; Mathers, A J

**Source:** The Journal of hospital infection; Nov 2018; vol. 100 (no. 3); p. e115

**Publication Date:** Nov 2018
Abstract: BACKGROUND: Handwashing sink drains are increasingly implicated as a potential reservoir of antibiotic-resistant bacteria in hospital outbreaks; however, usage patterns that may promote this source remain unknown.

AIM: To understand behaviours in the intensive care unit (ICU) that may facilitate establishment and nosocomial transmission of multidrug-resistant Gram negatives from a sink-trap reservoir to a patient.

METHODS: Motion-sensitive cameras captured anonymized activity paired with periodic in-person observations during a quality investigation from four ICU sinks (two patient rooms and two patient bathrooms) in a university hospital.

FINDINGS: We analysed 4810 sink videos from 60 days in patient rooms (3625) and adjoining bathrooms (1185). There was a false-positive rate of 38% (1837 out of 4810) in which the camera triggered but no sink interaction occurred. Of the 2973 videos with analysed behaviours there were 5614 observed behaviours which were assessed as: 37.4% medical care, 29.2% additional behaviours, 17.0% hand hygiene, 7.2% patient nutrition, 5.0% environmental care, 4.2% non-medical care. Handwashing was only 4% (224 out of 5614) of total behaviours. Sub-analysis of 2748 of the later videos further categorized 56 activities where a variety of nutrients, which could promote microbial growth, were disposed of in the sink.

CONCLUSION: Several non-hand hygiene activities took place regularly in ICU handwashing sinks; these may provide a mechanism for nosocomial transmission and promotion of bacterial growth in the drain. Redesigning hospital workflow and sink usage may be necessary as it becomes apparent that sink drains may be a reservoir for transmission of multidrug-resistant bacteria.

Database: Medline

19. NEWS BRIEFS

Author(s): Anonymous

Source: AORN Journal; Nov 2018; vol. 108 (no. 5); p. P5

Publication Date: Nov 2018

Publication Type(s): News

Abstract: Predictors of Clostridium difficile infection in hospitalized patients Authors of a study published in the American Journal of Infection Control sought to identify predictors of C difficile infection (CDI) at their facility, with the goal of reducing infection rates. Guidelines on perioperative management of antithrombotic agents released Based on a review of current evidence and guidelines from other professional health care organizations, the American College of Surgeons has published new guidance in the Journal of the American College of Surgeons to aid perioperative personnel in managing surgical patients taking antithrombotic medications. According to the authors, the most important updates provided in the guideline include indications for heparin bridging to prevent thromboembolism and management options for patients taking low-dose aspirin and direct oral anticoagulants.

Database: BNI
20. Single dose cefazolin is safe and effective for pre-operative prophylaxis in orthopaedic oncology

**Author(s):** Ziranu A.; Lillo M.; Maccuro G.; Fantoni M.; Maffulli N.

**Source:** Journal of biological regulators and homeostatic agents; Nov 2018; vol. 32 (no. 6); p. 45-49

**Publication Date:** Nov 2018

**Publication Type(s):** Conference Paper

**PubMedID:** 30644281

Available at [Journal of biological regulators and homeostatic agents](https://www.ebscohost.com) - from EBSCO (MEDLINE Complete)

**Abstract:** Surgical site infections (SSI) are a common potentially preventable complication after surgical procedures. A standardized antibiotic prophylaxis in elective orthopaedic surgery plays a major role in lowering SSI. At present, there is little published evidence regarding standardized antibiotic prophylaxis in orthopaedic oncological surgery. We introduced a prophylactic antibiotic protocol for orthopaedic oncological surgery in our hospital. The proposed protocol consists in "one-shot" intravenous administration of Cefazolin 2g, 30 min before surgery. In our setting, this preoperative antibiotic prophylaxis regimen was associated with a markedly lower rate of SSI's. There is no current evidence in favour of greater effectiveness of prophylaxis beyond 24/48 h after surgery compared to our pre-surgical "one-shot" administration; by contrast, prolonged post-surgical prophylaxis is likely to undermine the patient's bacterial flora and select resistant pathogens. These results are preliminary and should be used to start planning a standardised prophylactic protocol to prevent SSI's after orthopaedic oncological surgery.

**Database:** EMBASE

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21. GRam stain-guided Antibiotics ChoicE for Ventilator-Associated Pneumonia (GRACE-VAP) trial: Rationale and study protocol for a randomised controlled trial

**Author(s):** Yoshimura J.; Yamakawa K.; Kinoshita T.; Ohta Y.; Morimoto T.

**Source:** Trials; Nov 2018; vol. 19 (no. 1)

**Publication Date:** Nov 2018

**Publication Type(s):** Article

**PubMedID:** 30409160

Available at [Trials](https://www.ebSCOhost.com) - from BioMed Central
Available at [Trials](https://www.ebSCOhost.com) - from Europe PubMed Central - Open Access
Available at [Trials](https://www.ebSCOhost.com) - from EBSCO (MEDLINE Complete)

**Abstract:** Background: Optimising the use of antibiotic agents is a pressing challenge to overcoming the rapid emergence and spread of multidrug-resistant pathogens in intensive care units (ICUs). Although Gram staining may possibly provide immediate information for predicting pathogenic bacteria, Gram stain-guided initial antibiotic treatment is not well established in the ICU setting. We planned the GRam stain-guided Antibiotics ChoicE for Ventilator-Associated Pneumonia (GRACE-VAP) trial to investigate whether Gram staining can safely restrict the use of broad-spectrum antibiotics in patients with ventilator-associated pneumonia (VAP), which is one of the most common hospital-acquired infections in ICUs.

**Methods/design:** The GRACE-VAP trial is a multicentre, randomised, open-label parallel-group trial to assess the non-inferiority of Gram stain-guided initial antibiotic treatment to guidelines-based initial antibiotic treatment for the primary endpoint of clinical response rate in patients with VAP.
Secondary endpoints include the coverage rates of initial antibiotic therapies, the selected rates of anti-pseudomonal agents and anti-methicillin-resistant Staphylococcus aureus (anti-MRSA) agents as initial antibiotic therapies, 28-day all-cause mortality, ICU-free days, ventilator-free days and adverse events. Patients are randomly assigned to receive Gram stain-guided treatment or guidelines-based treatment at a ratio of 1:1. In the Gram stain group, results of Gram staining of endotracheal aspirate are used to guide the selection of antibiotics. In the guidelines group, the combination of an anti-pseudomonal agent and an anti-MRSA agent is administered. A total sample size of 200 was estimated to provide a power of 80% with a one-sided alpha level of 2.5% and a non-inferiority margin of 20%, considering 10% non-evaluable patients.

Discussion(s): The GRACE-VAP trial is expected to reveal whether Gram staining can reduce the use of broad-spectrum antibiotics without impairing patient outcomes and thereby provide evidence for an antibiotic selection strategy in patients with VAP. Trial registration: Clinicaltrials.gov, NCT03506113. Registered on 29 March 2018. University Hospital Medical Information Network, UMIN000031933. Registered on 26 March 2018. Copyright © 2018 The Author(s).

Database: EMBASE

22. Antimicrobial resistance profiles of nosocomial pathogens in regional China: A brief report from two tertiary hospitals in China
Author(s): Liu S.; Wang M.; Zheng L.; Guan W.
Source: Medical Science Monitor; Nov 2018; vol. 24 ; p. 8602-8607
Publication Date: Nov 2018
Publication Type(s): Article
PubMedID: 30482891
Available at Medical Science Monitor - from Europe PubMed Central - Open Access
Available at Medical Science Monitor - from EBSCO (MEDLINE Complete)
Abstract: Background: Antimicrobial resistance of nosocomial pathogens has become a worldwide problem that leads to major healthcare and economic burdens. Regional antimicrobial resistance profiles are needed to inform selection of proper antimicrobial agents.

Material/Methods: In collaboration with the Hospital Infection Control Office at our hospitals, we analyzed the constitution of nosocomial pathogens and the corresponding drug-resistance profiles. We paid particular attention to characteristics of pathogens that were derived from the bloodstream, and summarized the drug-resistance tendency of 2 specific bacteria within the most recent decade to reflect the development of resistance in regional China.

Result(s): The most common types of nosocomial pathogens were Escherichia coli (859 isolates, 14.3%), Staphylococcus aureus (763 isolates, 12.7%), Acinetobacter baumannii (681 isolates, 11.3%), Klebsiella pneumonia (660 isolates, 11.0%), and Pseudomonas aeruginosa (654 isolates, 10.9%). The most common types of bloodstream-derived pathogens were K. pneumoniae (125 isolates, 16.3%), E. coli (118 isolates, 15.3%), A. baumannii (81 isolates, 10.5%), Candida albicans (57 isolates, 7.4%), S. aureus (45 isolates, 5.9%), P. aeruginosa (44 isolates, 5.7%), and Enterobacterium spp. (42 isolates, 5.5%). Distinct antimicrobial resistance profiles were observed between different pathogens as well as between bloodstream-derived and other sources of pathogens. The resistant rates of A. baumanii and P. aeruginosa to antimicrobial agents have been increasing during the most recent 10 years at our hospital.

Conclusion(s): Our data demonstrated the characteristics of nosocomial infections and antibiotic resistance in regional China. The distinct resistance profile of each pathogen can help to tailor
individual antimicrobial strategy. The emerging resistant rates to antimicrobials require reinforced actions for infection prevention and control.

**Database:** EMBASE

23. Japan nosocomial infections surveillance (JANIS): a model of sustainable national antimicrobial resistance surveillance based on hospital diagnostic microbiology laboratories.

**Author(s):** Tsutsui, Atsuko; Suzuki, Satowa

**Source:** BMC health services research; Oct 2018; vol. 18 (no. 1); p. 799

**Publication Date:** Oct 2018

**Publication Type(s):** Multicenter Study Journal Article

**PubMedID:** 30342499

Available at BMC health services research - from ProQuest (Hospital Premium Collection) - NHS Version

Available at BMC health services research - from BioMed Central

Available at BMC health services research - from Europe PubMed Central - Open Access

Available at BMC health services research - from EBSCO (MEDLINE Complete)

**Abstract:**

**BACKGROUND:** Antimicrobial resistance (AMR) is now recognized as a major threat to public health, and surveillance of AMR is essential for successful containment. In 2000, Japan Nosocomial Infections Surveillance (JANIS) Clinical Laboratory (CL) division has been launched as a voluntary AMR surveillance funded by the Ministry of Health, Labour and Welfare and managed by the National Institute of Infectious Diseases. In this study, we aimed to propose a model of sustainable national AMR surveillance which provides not only national AMR surveillance reports but also benchmarking reports to each hospital to facilitate infection control practices.

**METHODS:** JANIS CL division collects comprehensive specimen-based data complies with JANIS data format from participating hospitals each month. It had targeted only blood and cerebrospinal fluid samples but was expanded to all types of specimens in 2007 at revision of JANIS. The JANIS system interprets the antimicrobial susceptibility according to the same criteria and conducts removal of duplicates to allow accurate comparison between hospitals. Monthly feedback reports are created automatically within 48 h, while quarterly and annual reports are generated after data validation.

**RESULTS:** At the beginning, 468 hospitals were enrolled in the JANIS CL division, but the number of hospitals that submitted data decreased to 210 (45%) in 2006. After surveillance revision in 2007, annual recruitment of hospitals was initiated and as of 2015, 1475 hospitals participated, and 1461 (99%) of them submitted data throughout the year. Nationwide surveillance data collected over the past decade revealed that the prevalence of methicillin-resistant Staphylococcus aureus has decreased since 2008, and that its prevalence is higher in the western part of Japan, where the number of hospitals per capita is higher than in the eastern part.

**CONCLUSIONS:** JANIS CL division serves a model of sustainable national AMR surveillance system. Comprehensive data for all specimens promotes understanding of the sampling frequency and prevalence of AMR. As a well-established system for providing rich information to guide action both locally and nationally, JANIS may also be utilized for sharing AMR data globally.

**Database:** Medline

Author(s): Abbo, Lilian; Shukla, Bhavarth S; Giles, Amber; Aragon, Laura; Jimenez, Adriana; Camargo, Jose F; Simkins, Jacques; Sposato, Kathleen; Tran, Truc T; Diaz, Lorena; Reyes, Jinnethe; Rios, Rafael; Carvajal, Lina P; Cardozo, Javier; Ruiz, Maribel; Rosello, Gemma; Cardona, Armando Perez; Martinez, Octavio; Guerra, Giselle; Beduschi, Thiago; Vianna, Rodrigo; Arias, Cesar A

Source: Clinical infectious diseases : an official publication of the Infectious Diseases Society of America; Oct 2018
Publication Date: Oct 2018
Publication Type(s): Journal Article
PubMedID: 30339217

Abstract: Background: Vancomycin-resistant enterococci are an important cause of healthcare-associated infections and are inherently resistant to many commonly used antibiotics. Linezolid is the only drug currently approved by the Food and Drug Administration (FDA) to treat vancomycin-resistant enterococci, however resistance to this antibiotic appears to be increasing. Although outbreaks of linezolid- and vancomycin-resistant Enterococcus faecium (LR-VRE) in solid organ transplant recipients remain uncommon, they represent a major challenge for infection control and hospital epidemiology.

Methods: We describe a cluster of four LR-VRE infections among a group of liver and multi-visceral transplant recipients in a single intensive care unit. Failure of treatment with linezolid in two cases led to a review of standard clinical laboratory methods for susceptibility determination. Testing by alternative methods including whole genome sequencing and a comprehensive outbreak investigation including sampling of staff members and surfaces was performed.

Results: Review of laboratory testing methods revealed a limitation in the VITEK®2 system with regards to reporting resistance to linezolid. Linezolid resistance in all cases was confirmed by E-test method. The use of whole genome sequencing (WGS) identified a resistant subpopulation with the G2376C mutation in the 23S ribosomal RNA. Sampling of staff members' dominant hands as well as sampling of surfaces in the unit identified no contaminated sources for transmission.

Conclusions: This cluster of LR-VRE in transplant recipients highlights the possible shortcomings of standard microbiology laboratory methods and underscores the importance of WGS to identify resistance mechanisms which can inform patient care as well as infection control and antibiotic stewardship measures.

Database: Medline

25. Colonization with Multidrug-Resistant Enterobacteriaceae is Associated with Increased Mortality Following Burn Injury in Sub-Saharan Africa.

Author(s): Gallaher, Jared R; Banda, Wone; Lachiewicz, Anne M; Krysiak, Robert; Cairns, Bruce A; Charles, Anthony G

Source: World journal of surgery; Oct 2018; vol. 42 (no. 10); p. 3089-3096
Publication Date: Oct 2018
Publication Type(s): Research Support, Non-u.s. Gov't Research Support, N.i.h., Extramural Journal Article
PubMedID: 29696325

Abstract: BACKGROUND: Multidrug-resistant (MDR) bacteria are an emerging international concern in low- and middle-income countries that threaten recent public health gains. These challenges are exacerbated in immunocompromised hosts, such as those with burn injury. This study sought to
describe the epidemiology and associated clinical outcomes of burn wound colonization in a Malawian tertiary burn center.

METHODS: This is a prospective analysis of burn patients presenting to Kamuzu Central Hospital in Lilongwe, Malawi, within 72 h of burn injury. A swab of each patient's primary wound was collected at admission and each subsequent week. The primary exposure was burn wound colonization with MDR bacteria, particularly Enterobacteriaceae. The primary outcome was in-hospital mortality. A log binomial model estimated the association between the exposure and outcome, adjusted for confounders.

RESULTS: Ninety-nine patients were enrolled with a median age of 4 years (IQR 2-12) and a male preponderance (54%). Median total body surface area burn (TBSA) was 14% (IQR 9-25), and crude in-hospital mortality was 19%. Enterobacteriaceae were the most common MDR bacteria with 36% of patients becoming colonized. Wound colonization with MDR Enterobacteriaceae was associated with increased in-hospital mortality with a risk ratio of 1.86 (95% CI 1.38, 2.50, p < 0.001) adjusted for TBSA, burn type (scald vs. flame), sex, age, length of stay, and methicillin-resistant Staphylococcus aureus colonization.

CONCLUSION: MDR bacteria, especially Enterobacteriaceae, are common and are associated with worse burn injury outcomes. In resource-poor environments, a greater emphasis on prevention of MDR bacterial colonization, improved isolation precautions, affordable diagnostics, and antibiotic stewardship are imperative.

Database: Medline


Author(s): Angeletti, Silvia; Cella, Eleonora; Prosperi, Mattia; Spoto, Silvia; Fogolari, Marta; De Florio, Lucia; Antonelli, Francesca; Dedej, Etleva; De Flora, Cecilia; Ferraro, Elisabetta; Incalzi, Raffaele Antonelli; Coppola, Roberto; Dicuonzo, Giordano; Francescato, Fabio; Pascarella, Stefano; Ciccozzi, Massimo

Source: Microbial pathogenesis; Oct 2018; vol. 123; p. 233-241
Publication Date: Oct 2018
Publication Type(s): Journal Article
PubMedID: 30031889

Abstract: Pseudomonas aeruginosa causes a wide variety of nosocomial infections. In the study, phylogenetic, selective pressure analysis and homology modelling were applied to oprD efflux pump gene with the aim to characterize multi-drug resistant strains circulating in the nosocomial setting, their transmission dynamics and ongoing evolution. One hundred ninety-three consecutive inpatients with Pseudomonas aeruginosa infection were enrolled at the University Campus Bio-Medico of Rome, between January 2015 and December 2016. oprD gene was sequenced in 20 nosocomial multi-drug resistant P. aeruginosa strains. Phylogeographic, selective pressure, residue conservation analysis and homology modelling were performed. Clinical epidemiological data were extracted from patient medical records. Multi-drug resistant strains accounted for the 36% of total strains and were responsible of 20 cases of nosocomial infections. P. aeruginosa infections occurred prevalently in the West area, especially at the location IIIW and in the Geriatric ward. The time of the most recent common ancestor indicated that strains could have been introduced in the hospital since the end of the year 2009 with the most probable location in general surgery ward. By selective pressure analysis, 29 positions under diversifying selection have been identified and mapped onto the OprD model. Most of the observed residue substitutions are predicted to be destabilizing and some of them occurred in the Loops 2 and 3 that are involved in solute selection and carbapenem
susceptibility. The molecular and evolutionary analysis of Multi-drug resistant strains circulating in the nosocomial setting may provide useful insights into the epidemiology and the mechanisms leading to resistance, contributing to infection control improvement.

**Database:** Medline

**27. Spread of Vancomycin-Resistant Enterococcus faecium Isolates Despite Validated Infection Control Measures in an Italian Hospital: Antibiotic Resistance and Genotypic Characterization of the Endemic Strain.**

**Author(s):** Bressan, Raffaela; Knezevich, Anna; Monticelli, Jacopo; Campanile, Floriana; Busetti, Marina; Santagati, Maria; Dolzani, Lucilla; Milan, Annalisa; Bongiorno, Dafne; Di Santolo, Manuela; Tonin, Enrico A; Stefani, Stefania; Luzzati, Roberto; Lagatolla, Cristina

**Source:** Microbial drug resistance (Larchmont, N.Y.); Oct 2018; vol. 24 (no. 8); p. 1148-1155

**Publication Date:** Oct 2018

**Publication Type(s):** Journal Article

**PubMedID:** 29373085

**Abstract:** An alarming increase of vancomycin-resistant Enterococcus faecium (VREfm) isolates was detected in an Italian referral hospital subjected to policies of infection control validated by the Joint Commission International. Analysis of the population structure of 122 consecutive, nonreplicate VREfm isolates collected over an 18-month period identified a single major clone that spread around the whole hospital, rapidly establishing an endemic state. It belonged to sequence type (ST) 17 and showed a highly multidrug-resistant phenotype, being resistant to all antimicrobial classes for the carriage of several resistance determinants. Furthermore, some strains with decreased susceptibility to daptomycin were detected. Eighteen out of the 122 isolates did not group in the major clone. They showed a low spreading potential inside the hospital wards, even if most of them displayed a multidrug-resistant phenotype and belonged to a hospital-adapted lineage. Causes that led to the VREfm endemic state have not been fully elucidated. However, it is conceivable that the increase in systemic antibiotic consumption and the use of selective digestive tract decontamination, including vancomycin in critically ill patients during the period before 2014, may have played a role in the ST17 clone dissemination, but additional traits conferring high fitness in hospital environment cannot be excluded.

**Database:** Medline

**28. Implementation and outcomes of hospital-wide computerized antimicrobial approval system and on-the-spot education in a traumatic intensive care unit in Taiwan.**

**Author(s):** Huang, Tsung-Yu; Hung, Chien-Hui; Lai, Li-Ju; Chuang, Hui-Ju; Wang, Chien-Chen; Lin, Pei-Tzu; Hsu, Wei-Hsiu

**Source:** Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi; Oct 2018; vol. 51 (no. 5); p. 672-680

**Publication Date:** Oct 2018

**Publication Type(s):** Comparative Study Journal Article

**PubMedID:** 29167061

**Abstract:** BACKGROUND/PURPOSE: Inappropriate prescribing of antibiotics is a major health-care problem in intensive care units (ICUs). This study evaluates the impact of a direct hospital-wide...
computerized antimicrobial approval system (HCAAS) and on-the-spot education for practitioners in a neurosurgical ICU in Taiwan.

METHODS: We retrospectively analyzed the medical records monthly of patients who were admitted to the neurosurgical ICU during a period of 7 years and 7 months. A pretest-post-test time series analysis, comparing the three periods: period I (no infectious disease (ID) physician), period II (part-time ID physicians), and period III (full-time ID physician). Antimicrobial consumption and expenditure, incidence of hospital-associated infections, prevalence of healthcare-associated bacterial isolates, in-hospital mortality rates, and indication of antibiotics usage were analyzed.

RESULTS: Full-time ID physician can increase the consumption of narrow-spectrum antimicrobials (cefazolin, and cefuroxime), and decrease the consumptions of broad-spectrum antimicrobials (ceftazidime, cefepime, and vancomycin) compared to part-time ID physicians. From period I to period III, the expenditure of antimicrobials, incidence of hospital-associated pneumonia, and the in-hospital mortality rates (crude, sepsis-related, and overall infection-related mortality) decreased statistically. The prevalence of extended-spectrum β-lactamase-producing Escherichia coli and Klebsiella pneumoniasae, and Carbapenems-resistant Pseudomonas aeruginosa remained at low level after HCAAS implementation. From 2007 to 2009, the rational antibiotics usage continued to increase, resulting from to more prophylaxis and appropriate microbiologic proof, but less empiric antimicrobial therapy.

CONCLUSION: Implementation of HCAAS and long-term on-the-spot education by full-time ID physician can reduce antimicrobial consumption, cost, and improve inappropriate antibiotic usage whilst not compromising healthcare quality.

Database: Medline

29. Community-acquired bloodstream infections caused by Acinetobacter baumannii: A matched case-control study.

Author(s): Chen, Chung-Ting; Wang, Yung-Chih; Kuo, Shu-Chen; Shih, Fang-Huy; Chen, Te-Li; How, Chorng-Kuang; Yang, Ya-Sung; Lee, Yi-Tzu

Source: Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi; Oct 2018; vol. 51 (no. 5); p. 629-635

Publication Date: Oct 2018

Publication Type(s): Comparative Study Journal Article

PubMedID: 28701266

Available at Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi - from Unpaywall

Abstract: BACKGROUND: Acinetobacter baumannii is an important nosocomial pathogen worldwide. Its role in community-acquired infection remains controversial and has rarely been reported.

METHODS: Patients with monobacterial bloodstream infections caused by genomic species identified A. baumannii, admitted to Taipei Veterans General Hospital between 1999 and 2010, were selected as cases. Controls were defined as patients acquiring infection in a healthcare setting and were matched for age and sex. The clinical, epidemiologic, and microbiological characteristics of cases and controls were compared.

RESULTSCases presented with shock more frequently and had higher APACHE II scores (25 vs 19, p = 0.005). No significant differences between the two groups were noted in the sources of bloodstream infection and underlying diseases. Multidrug resistance rates were higher in nosocomial A. baumannii isolates then in those acquired in the community (81.5% vs 38.9%, p = 0.002). Patients infected in the community were more likely to receive appropriate antimicrobial therapy than those with hospital-acquired A. baumannii (10/18; 55.6% vs 11/54; 20.4%, p = 0.011). Acquisition in the community (odds ratio [OR] 5.716, 95% confidence
interval (CI) 1.021-32.003, p = 0.047), respiratory tract as the infection source (OR 9.514, 95% CI 2.370-38.189, p = 0.001), and immunosuppressive therapy (OR 4.331, 95% CI 1.052-17.832, p = 0.042) were independently associated with increased 14-day mortality among patients with A. baumannii bacteremia in this cohort.

**CONCLUSION:** Community-acquired bacteremia caused by A. baumannii was rare but associated with a severe outcome. Further investigation of potential virulence factors of community-acquired A. baumannii is required.

**Database:** Medline


**Author(s):** Ting, Shih-Wen; Lee, Chen-Hsiang; Liu, Jien-Wei

**Source:** Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi; Oct 2018; vol. 51 (no. 5); p. 621-628

**Publication Date:** Oct 2018

**Publication Type(s):** Comparative Study Journal Article

**PubMedID:** 28732563

Available at [Journal of microbiology, immunology, and infection = Wei mian yu gan ran za zhi](https://www.unpaywall.org/details/doaj/articles/0001-0001-0000-0000) - from Unpaywall

**Abstract:** **BACKGROUND/PURPOSE:** A substantial number of carbapenem-resistant Gram-negative bacilli (CR GNB) have been identified among the etiologic multidrug-resistant GNB in healthcare-associated infections. For achieving a better therapeutic outcome by minimizing inappropriate empirical antibiotic treatment before blood culture and susceptibility testing results are available, it is very important to identify patients who are at risk for the development of CR GNB bacteremia.

**METHODS:** Retrospective analysis of propensity-score matched (PSM) adult patients with CR GNB bacteremia (PSM-group 1 [n = 95]) and those with non-CR GNB bacteremia (PSM-group 2 [n = 190]).

**RESULT:** PSM-group 1 was found to a significantly longer length of hospital stay (27 vs. 18 days; p < 0.001) after emerging GNB bacteremia and a higher 30-day all-cause mortality rate (27.4% vs. 5.8%; p < 0.001), when compared with PSM-2 group. Independent risk factors for the acquisition of CR GNB bacteremia were previous exposure to an antipseudomonal penicillin (odds ratio [OR] = 3.58; 95% confidence interval [CI] = 1.30-9.90), an antipseudomonal cephalosporin (OR = 3.49; 95% CI = 1.09-11.24), and a carbapenem (OR = 3.60; 95% CI = 1.37-9.47), and longer length of hospital stay before the development of GNB bacteremia (OR = 1.03; 95% CI = 1.01-1.05).

**CONCLUSION:** Risk factors for acquisition of CR GNB bacteremia identified in this study each may serve as a reminder alerting clinicians to hospitalized patients at risk for CR GNB bacteremia requiring appropriate antibiotic coverage, and in these circumstances, combined antibiotics may be used until antimicrobial de-escalation/adjustment is clearly indicated by the subsequently identified pathogenic GNB and its susceptibility profile.

**Database:** Medline


**Author(s):** Papst, L; Beović, B; Pulcini, C; Durante-Mangoni, E; Rodríguez-Baño, J; Kaye, K S; Daikos, G L; Raka, L; Paul, M; ESGAP, ESBIS, ESGIE and the CRGNB treatment survey study group
OBJECTIVES: To explore contemporary antibiotic management of infections caused by carbapenem-resistant Gram-negative bacteria in hospitals.

METHODS: Cross-sectional, internet-based questionnaire survey. We contacted representatives of all hospitals with more than 800 acute-care hospital beds in France, Greece, Israel, Italy, Kosovo, Slovenia, Spain and selected hospitals in the USA. We asked respondents to describe the most common actual practice at their hospital regarding management of carbapenem-resistant Enterobacteriaceae, Acinetobacter baumannii and Pseudomonas aeruginosa through close-ended questions.

RESULTS: Between January and June 2017, 115 of 141 eligible hospitals participated (overall response rate 81.6%, country-specific rates 66.7%-100%). Most were tertiary-care (99/114, 86.8%), university-affiliated (110/115, 89.1%) hospitals and most representatives were infectious disease specialists (99/115, 86.1%). Combination therapy was prescribed in 114/115 (99.1%) hospitals at least occasionally. Respondents were more likely to consider combination therapy when treating bacteraemia, pneumonia and central nervous system infections and for Enterobacteriaceae, P. aeruginosa and A. baumannii similarly. Combination of a polymyxin with a carbapenem was used in most cases, whereas combinations of a polymyxin with tigecycline, an aminoglycoside, fosfomycin or rifampicin were also common. Monotherapy was used for treatment of complicated urinary tract infections, usually with an aminoglycoside or a polymyxin. The intended goal of combination therapy was to improve the effectiveness of the treatment and to prevent development of resistance. In general, respondents shared the misconception that combination therapy is supported by strong scientific evidence.

CONCLUSIONS: Combination therapy was the preferred treatment strategy for infections caused by carbapenem-resistant Gram-negative bacteria among hospital representatives, even though high-quality evidence for carbapenem-based combination therapy is lacking.

Database: Medline

32. Clinical and economic burden of bloodstream infections caused by meticillin-resistant and meticillin-susceptible Staphylococcus aureus in Chinese tertiary hospitals from 2010 to 2017: a multicentre, retrospective cohort study

Author(s): Wushouer, Haishaerjiang; Guan, Xiaodong; Han, Sheng; Shi, Luwen

Source: The Lancet; Oct 2018; vol. 392 ; p. S67

Abstract: Background: Globally, antimicrobial resistance has become one of the most complex public health challenges. Accurate estimates of health and economic burden of antimicrobial resistance has not been available in China because of the absence of representative empirical data. We therefore aimed to estimate the effect of antimicrobial resistance attributable to Staphylococcus aureus bloodstream infections in Chinese hospitals, and to compare the effect of resistant strains with susceptible strains.

Methods: We did a multicentre, retrospective cohort study of 11 tertiary hospitals in China. The cohort consisted of all inpatients with S aureus bloodstream infections from the sample hospitals,
and we randomly included individuals free of S aureus bloodstream infections. We stratified the patients into two categories of S aureus bloodstream infections: meticillin-susceptible S aureus (MSSA) or meticillin-resistant S aureus (MRSA). The primary outcome was the effect of antimicrobial resistance on excess length of stay in the hospital, hospital mortality, and cost of treatment. We adopted a multistate model to estimate the expected length of stay. Multi-level Cox proportional hazards models were adopted to compare the hazard of reaching hospital death, discharge alive, and the combined end-of-stay endpoint. Two bed-day values were adopted when estimating the cost of treatment. This study was approved by Peking University Health Science Center Ethics Committee, with a waiver for individual informed consent. Findings From Jan 1, 2010, to June 31, 2017, we assessed 861 inpatients with S aureus bloodstream infections and 10 000 individuals free of S aureus bloodstream infections. Of the 861 admissions with an S aureus blood stream infection detected, 324 (38%) were due to MRSA and 537 (62%) were due to MSSA. Bloodstream infections caused by MRSA prolonged the length of stay in the hospital by 13·4 days (95% CI 11·1–16·3), and MSSA bloodstream infections prolonged the length of stay by 11·9 days (95% CI 9·7–14·1). However, bloodstream infections caused by MRSA did not increase the hazard of death (adjusted hazard ratio [aHR] 0·31, 95% CI 0·09–1·10). MSSA bloodstream infections also did not increase the hazard of death (aHR 0·44, 95% CI 0·19–1·03), excess length of stay (1·5 days, 95% CI −0·4 to 2·8), and cost of treatment. Although the cost of MRSA treatment was higher per infection than MSSA treatment, the annual cost of MSSA was higher overall. Interpretation By accounting for time-dependent bias and important confounders, this study added to the existing literature about the effect of antimicrobial resistance in China. Current results of the study implicate the importance of surveillance and infection control policies that target infections rather than resistance. Funding China Medical Board (17-270).

Database: BNI

33. Carbapenemase-producing Enterobacteriaceae isolates resistant to last-line antibiotics in an Italian general hospital

Author(s): Ferranti M.; Palmieri M.I.; Repetto A.; Schiaroli E.; Francisci D.; Vecchiarelli A.; Mencacci A.; Monari C.

Source: The new microbiologica; Oct 2018; vol. 41 (no. 4); p. 274-281

Publication Date: Oct 2018

Publication Type(s): Article

PubMedID: 30252925

Abstract: The global dissemination of carbapenemase-producing Enterobacteriaceae (CPE) is of great concern for public health. These bacteria have the potential for rapid dissemination in healthcare settings and cause infections associated with high rates of morbidity and mortality. A total of 221 carbapenem non-susceptible Enterobacteriaceae isolates were collected from patients admitted to an Italian general hospital from January 2016 to March 2017. Among these isolates, 78.3% were carbapenemase producers: 96% were positive for the blaKPC gene and the remainder for the blaVIM gene (allelic variant VIM-1). CPE isolates were mainly Klebsiella pneumoniae, but we also detected carbapenemase enzymes in Citrobacter freundii, Enterobacter cloacae and Escherichia coli. Among CPE isolates, 79.2% exhibited co-resistance to two or more non-b-lactam agents and 38% of these isolates (all KPC-positive) were resistant to colistin. This percentage reached 55% among CPE isolated from the bloodstream. All patients with colistin-resistant CPE isolates recovered from blood samples showed an unfavorable outcome within 7 days from the first positive blood culture. Our data show the dissemination of a high percentage of CPE isolates co-resistant to last-line antibiotics. In addition, we report the first identification in our hospital of CPE isolates harboring
the blaVIM gene and Escherichia coli harboring the blaKPC gene. These results underline the need to implement antibiotic stewardship and infection control programs, and emphasize the need for novel antimicrobial agents active against CPE.

**Database:** EMBASE

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34. **The Use of Liquids Ionic Fluids as Pharmaceutically Active Substances Helpful in Combating Nosocomial Infections Induced by Klebsiella Pneumoniae New Delhi Strain, Acinetobacter Baumannii and Enterococcus Species.**

**Author(s):** Miskiewicz, Andrzej; Ceronowicz, Piotr; Szymczak, Mateusz; Bartuś, Krzysztof; Kowalczyk, Paweł

**Source:** International journal of molecular sciences; Sep 2018; vol. 19 (no. 9)

**Publication Date:** Sep 2018

**Publication Type(s):** Journal Article Review

**PubMedID:** 30223584

Available at [International journal of molecular sciences](https://www.ncbi.nlm.nih.gov/pubmed/30223584) - from Europe PubMed Central - Open Access

**Abstract:** This review deals with various microbiological activities of ionic liquids, which constitute the first anti-infective defense against multi-drug-resistant bacteria-with a particular emphasis placed on medicine and pharmacology. The quoted data on the biological activity of ionic liquids including their antimicrobial properties (depending on the type of a cation or an anion) and are discussed in view of possible applications in nosocomial infections. Dedicated attention is given to finding infections with the Klebsiella pneumoniae New Delhi strain, Acinetobacter baumannii, and Enterococcus species, which are responsible for the induction of antibiotic resistance in intensive care units. Diagnosis and treatment using current antibiotics is a significant problem in hospital care, and the relevant burden on the health systems of the European Union member states induces the search for new, effective methods of treatment. Ionic liquids, due to their antibacterial effect, can be considered topical and general medications and may provide the basis for treatment to eliminate the antibiotic resistance phenomenon in the future. At present, the number of infections with resistant pathogens in hospitals and outpatient clinics in the European Union is growing. In 2015-2017, a significant incidence of respiratory and bloodstream infections with bacteria resistant to antibiotics from the 3rd generation group of cephalosporins, glycopeptides, and carbapenems were observed. The paper presents examples of synthesized bifunctional salts with at least one pharmaceutically active ion in obtaining a controlled release, controlled delivery, and biological impact on the pathogenic bacteria, viruses and fungi. The ionic liquids obtained in the presented way may find applications in the treatment of wounds and infections.

**Database:** Medline

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35. **Prevention of surgical site infection via antibiotic administration according to guidelines after gynecological surgery.**

**Author(s):** Toba, Mikayo; Moriwaki, Mutsuko; Oshima, Noriko; Aiso, Yoshibumi; Shima, Mari; Nukui, Yoko; Obayashi, Satoshi; Fushimi, Kiyohide

**Source:** The journal of obstetrics and gynaecology research; Sep 2018; vol. 44 (no. 9); p. 1800-1807

**Publication Date:** Sep 2018

**Publication Type(s):** Journal Article

**PubMedID:** 30051538
Abstract: AIM: We modified the antimicrobial prophylaxis of surgical site infection (SSI) according to the guidelines of the Japanese Society of Chemotherapy and Japan Society of Infectious Diseases (hereinafter referred to as optimization) and measured outcomes.

METHODS: From April 2016 to March 2017, we performed cesarean section and open hysterectomy with optimization, and compared the outcome to that of surgery performed without optimization between April 2014 and March 2016. We measured the rates of antibiotic discontinuation, appropriate antibiotic selection, SSI incidence, resumption of antibiotic therapy and fever incidence, as well as the length of postoperative hospital stay and medical expenses for antibiotics to evaluate the appropriateness and outcomes of antibiotic prophylaxis.

RESULTS: Optimization resulted in a change in the method of selecting antibiotics for cesarean section, but there was no change in SSI incidence rate (0.74% vs 0.0%, P = 0.36). Optimization reduced the use of antibiotics and medical expenses of hysterectomy (median reduction of 50% and 78% for hysterectomy without or with lymphadenectomy, respectively). However, there was no change in outcome regarding SSI incidence (5.7% vs 0.0%, P = 0.11 and 7.8% vs 9.5%, P = 0.77, respectively).

CONCLUSION: Appropriate use of antibiotics according to guidelines reduced antibiotic dose and medical expenses, but there was no change in outcome regarding SSI incidence rate. These findings suggested that implementation of dosing regimens according to the guidelines would be useful to reduce antibiotic medicine costs and prevent resistant bacteria and complications associated with antibiotics.

Database: Medline

36. Risk factors for fecal carriage of IMP-6-producing Enterobacteriaceae at a long-term care hospital in Japan: A follow-up report from the northern Osaka multicentre study group.

Author(s): Hagiya, Hideharu; Yamamoto, Norihisa; Kawahara, Ryuji; Akeda, Yukihiro; Shanmugakani, Rathina Kumar; Ueda, Akiko; Nishi, Isao; Asada, Rumiko; Yoshida, Hisao; Tomono, kazunori

Source: Journal of infection and chemotherapy : official journal of the Japan Society of Chemotherapy; Sep 2018; vol. 24 (no. 9); p. 769-772

Publication Date: Sep 2018

Publication Type(s): Multicenter Study Journal Article

PubMedID: 29656900

Abstract: The prevalence of carbapenem-resistant Enterobacteriaceae (CRE) has been increasing at medical institutions in Japan without even noticing. Recently, we performed a point prevalence survey for CRE carriage at a medical facility in northern Osaka that demonstrated an unexpectedly high prevalence of blalMP-6-positive CRE, particularly at long-term care hospitals (LTCH). To identify the risk factors for CRE carriage, we collected clinical data of patients at a representative LTCH. Of 140 patients who were included in this study, 27 (19.3%) were colonized with metallo-beta-lactamase (IMP-6) producers. Pulsed-field gel electrophoresis of the IMP-6 producing Enterobacteriaceae suggested a non-clonal transmission of Escherichia coli, while a clonal spread was shown for Klebsiella pneumoniae. Risk factors for CRE colonization were a longer stay at the hospital stay and a lower independence state, as measured by Norton scales. We propose that a paradigm shift in infection control, inciting a coordinated regional effort to involve LTCHs, should be discussed in the aging society of Japan.

Database: Medline

Author(s): Melese, Zinabu Teka; Mwalili, S M; Orwa, G O
Source: Bio Systems; Sep 2018; vol. 171 ; p. 80-92
Publication Date: Sep 2018
Publication Type(s): Journal Article
PubMedID: 29953912

Abstract: Despite numerous studies conducted, multidrug-resistant infections such as methicillin-resistant Staphylococcus aureus (MRSE) and vancomycin-resistant enterococci (VRE) are still increasing in hospitals, and yet continued to be the important challenges of worldwide health. Mathematical modeling gives an insightful information in policy and decision making to control the transmission and spread of these infections globally. We formulated and analyse a mathematical model to characterise the transmission co-dynamics of hospital-acquired MRSE (HA-MRSA) and community-acquired MRSE (CA-MRSA) and to investigate the long run competitiveness of the two strains in hospital. Numerical simulations are carried out to explore the basic reproduction numbers for the two strains so as to determine the dominant strain in the future in hospital setting. Under some conditions, invasion reproduction numbers are also applied to determine the uniform persistence of the two strains. We further performed sensitivity analysis to examine the influence of model parameters on the transmission and spread of the strains, thereby determine the effective intervention strategies that reduce the overflow of the infections in hospital setting. To support theoretical findings qualitatively, graphical representations are provided.

Database: Medline

38. Changes in bacterial hospital epidemiology

Author(s): Canton R.; Morosini M.I.
Source: Revista espanola de quimioterapia : publicacion oficial de la Sociedad Espanola de Quimioterapia; Sep 2018; vol. 31 ; p. 23-26
Publication Date: Sep 2018
Publication Type(s): Review
PubMedID: 30209918

Abstract: Antibiotics' use and prescription requires a profound review, as their inadequate administration has been one of the main forces leading to resistance as a result of overuse and misuse. Resistance is particularly challenging in nosocomial environments in which there has been a gradual change in bacterial epidemiology owing to the continuous increase of multi-drug-resistant isolates, which imply a threat to prevent and cure infections. Expertise at the time of using antibiotics, development of new diagnostic tools and the possibility of having new antimicrobials are required to stay ahead of evolving resistance. Moreover, surveillance is also relevant to monitor antimicrobial resistance.

Database: EMBASE

39. [Analysis of antimicrobial resistance and risk factors of community-onset methicillin-resistant staphylococcus aureus infection].

Author(s): Shen, Y Y; Ye, L Y; Zhang, Y Q; Song, L J; Zhao, Q; Luo, Y P; Zhang, Y
Source: Zhonghua yi xue za zhi; Aug 2018; vol. 98 (no. 32); p. 2588-2590
Publication Date: Aug 2018
Publication Type(s): Journal Article
PubMedID: 30220145

Abstract: Objective: To analyze risk factors and drug resistance of community-onset methicillin-resistant staphylococcus aureus (CO-MRSA) infection through the investigation of patients infected with CO-MRSA.

Methods: The clinical data of 97 cases infected with community-onset staphylococcus aureus (COSA) was collected in this hospital from July 2016 to June 2017. Epidemiological survey method and the variables were determined according to expert consultation, literature and practical work experience.

Results: Among 97 patients infected with COSA, the diagnosis rate of CO-MRSA was 21.65%(21/97). The drug sensitivity results showed that: CO-MRSA was high resistant to erythromycin, tetracycline and clindamycin, and the drug resistance rate exceeded 50%. Multiple variables were analyzed by Logistic regression. The usage of antimicrobial agents in the past three months and the history of hospitalization within one year were the independent risk factors. The MRSA infection rate was 57.89%(11/19) of the persons who had taken antibacterial agents in the recent three months. The MRSA infection rate was 48.28%(14/29) of the persons who had been hospitalized in the past one year. OR value of two risk factors was respectively 10.006 (95%CI: 2.200-45.519, P=0.030) and 11.519 (95%CI: 2.405-55.177, P=0.002).

Conclusions: Most COSA is sensitive to methicillin, but CO-MRSA is multidrug resistant and has more risk factors. The clinicians should reasonably use the antibacterial agents according to the drug sensitivity in order to prevent the occurrence of multidrug resistant MRSA.

Database: Medline

40. Epidemiological evaluation of an Acinetobacter baumannii outbreak observed at an intensive care unit.

Author(s): Atik, Tuğba K; Atik, Bülent; Kilinç, Osman; Bektöre, Bayhan; Duran, Hülya; Selek, Burak M; Ceken, Nihan; Baylan, Orhan; Özyurt, Mustafa

Source: Saudi medical journal; Aug 2018; vol. 39 (no. 8); p. 767-772
Publication Date: Aug 2018
Publication Type(s): Journal Article
PubMedID: 30106413

Available at Saudi medical journal - from Europe PubMed Central - Open Access
Available at Saudi medical journal - from EBSCO (MEDLINE Complete)

Abstract: OBJECTIVES: To reveal the relationship between clinical and environmental isolates, analyzing both phenotypic and molecular aspects, in an Acinetobacter baumannii (A. baumannii) epidemic, and to use the epidemiological data to determine the source of the epidemic, to identify potential risk factors, and inform the effort to prevent and manage future epidemics.

METHODS: Acinetobacter baumannii was isolated from 5 clinical samples in Sultan Abdulhamid Han Training and Research hospital, Istanbul, Turkey, for a week period. To determine potential sources of infection we established cultures surveillance. Microbiological identification and antibiotic susceptibility testing of A. baumannii were performed using conventional methods and automated identification system. Multiplex polymerase chain reaction (PCR) and pulsed-field gel electrophoresis (PFGE) were used for carbapenemase gene screening and clonal relationship evaluation.
RESULTS: Among the environmental samples, bacterial growth was observed in 3 of the sample cultures. Clinical and environmental samples collected from patients X and Y had phenotypically similar antibiotic susceptibility patterns. The clinical and environmental isolates from patients X and Y comprised the first cluster (6 isolates), the isolates from patient Z formed the second cluster (2 isolates).

CONCLUSION: We detected that all outbreak-related isolates contained the same OXA-type carbapenemase genes. Phenotypic similarity, based on the analysis of antimicrobial susceptibility patterns, was correlated with genotypic similarity. These results suggest that monitoring antimicrobial resistance patterns with daily culture surveillance follow-ups, coupled with the use of amplification based methods to detect that clonal relationships are important for the early identification of outbreaks and rapid deployment of proper countermeasures to halt the spread of the causative agent.

Database: Medline

41. Decontaminating surfaces with atomized disinfectants generated by a novel thickness-mode lithium niobate device.

Author(s): Kumaraswamy, Monika; Collignon, Sean; Do, Carter; Kim, Janie; Nizet, Victor; Friend, James

Source: Applied microbiology and biotechnology; Aug 2018; vol. 102 (no. 15); p. 6459-6467

Publication Date: Aug 2018

Publication Type(s): Journal Article

PubMedID: 29804135

Abstract: We evaluated the ability of a novel lithium niobate (LN) thickness-mode device to atomize disinfectants and reduce microbial burden on model surface materials. A small-scale plastic model housed the LN thickness-mode device and circular coupon surface materials including polycarbonate, polyethylene terephthalate, stainless steel, borosilicate glass, and natural rubber. Coupon surfaces were coated with methicillin-resistant Staphylococcus aureus (MRSA) or multidrug-resistant (MDR) strains of Gram-negative bacterial pathogens (Klebsiella pneumoniae, Escherichia coli, and Acinetobacter baumannii), atomized with disinfectant solutions of varying viscosity (including 10% bleach, 70% ethanol (EtOH), or 25% triethylene glycol (TEG)) using the LN thickness-mode device, and assessed for surviving bacteria. The LN thickness-mode device effectively atomized disinfectants ranging from low viscosity 10% bleach solution or 70% EtOH to highly viscous 25% TEG. Coupons harboring MDR bacteria and atomized with 10% bleach solution or 70% EtOH were effectively decontaminated with ~ 100% bacterial elimination. Atomized 25% TEG effectively eliminated 100% of K. pneumoniae (CRE) from contaminated coupon surfaces but not MRSA. The enclosed small-scale plastic model established proof-of-principle that the LN thickness-mode device could atomize disinfectants of varying viscosities and decontaminate coupon surface materials harboring MDR organisms. Future studies evaluating scaled devices for patient rooms are warranted to determine their utility in hospital environmental decontamination.

Database: Medline

42. Investigating the impact of poverty on colonization and infection with drug-resistant organisms in humans: A systematic review

Author(s): Alividza V.; Mariano V.; Ahmad R.; Charani E.; Rawson T.M.; Holmes A.H.; Castro-Sanchez E.

Source: Infectious Diseases of Poverty; Aug 2018; vol. 7 (no. 1)
Abstract: Background: Poverty increases the risk of contracting infectious diseases and therefore exposure to antibiotics. Yet there is lacking evidence on the relationship between income and non-income dimensions of poverty and antimicrobial resistance. Investigating such relationship would strengthen antimicrobial stewardship interventions.

Method(s): A systematic review was conducted following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, Ovid, MEDLINE, EMBASE, Scopus, CINAHL, PsychINFO, EBSCO, HMIC, and Web of Science databases were searched in October 2016. Prospective and retrospective studies reporting on income or non-income dimensions of poverty and their influence on colonisation or infection with antimicrobial-resistant organisms were retrieved. Study quality was assessed with the Integrated quality criteria for review of multiple study designs (ICROMS) tool.

Result(s): Nineteen articles were reviewed. Crowding and homelessness were associated with antimicrobial resistance in community and hospital patients. In high-income countries, low income was associated with Streptococcus pneumoniae and Acinetobacter baumannii resistance and a seven-fold higher infection rate. In low-income countries the findings on this relation were contradictory. Lack of education was linked to resistant S. pneumoniae and Escherichia coli. Two papers explored the relation between water and sanitation and antimicrobial resistance in low-income settings.

Conclusion(s): Despite methodological limitations, the results suggest that addressing social determinants of poverty worldwide remains a crucial yet neglected step towards preventing antimicrobial resistance. Copyright © 2018 The Author(s).

Database: EMBASE
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