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Abstracts

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ABSTRACTS

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Oral Presentations

THURSDAY

O1 A paradigm for sustained reduction in blodd culture contamination in a resource limited setting

Purnima Parthasarathy, Jijo John

Apollo Hospital, Bangalore, India

Background

Blood culture contamination is a common problem resulting in prolonged hospitalization, increased health care costs, irrational antibiotic use and resistance. The CLSI/ASM benchmark for the maximum acceptable contaminated blood culture is 3%. The potential skin contaminant rates at a tertiary center in India were found to be upto 8%.

Objective

To decrease the potential blood culture contamination rate in the hospital facility to less than 3%.

Methods

The Infection control team led by an Infectious disease specialist investigated blood culture contamination through interviews and direct observation during collection. A series of interventions were instituted in September 2010: 1. A complete aseptic protocol was developed. 2. A 'kit' containing materials necessary for the blood culture was customized. 3. Extensive educational campaigns were conducted. 4. Skin decontamination with Chlorhexidine in 70% alcohol was instituted. 5. Regular feedback of contamination rates were provided to the staff. The outcome measure was monthly contamination rates of blood cultures as isolated in the microbiology department. Results: 83 (6.99%) of 1186 samples in the pre intervention period (June to August 2010) were identified as potential contaminants, while only 80 (2.42 %) of 3298 samples, between September 2010 and April 2011 were positive. The rates were sustained below the CLSI benchmark, for 8 consecutive months using the same protocol.

Conclusion

Blood culture contamination rates can be reduced even in a resource- limited health care setting to meet CLSI benchmark. Implementation of a structured protocol with continuous education, results in significant sustained reduction in blood culture contamination rates.

O2 Optimizing patient safety in the pediatric bone marrow transplant program: improving infection control practices during bone marrow harvest procedures

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Background

Bone marrow (BM), intended for transplantation, is extracted aseptically with a needle and syringe from the donor's posterior iliac crests. As the harvested amount may be >1L in volume, processing and sterility-checks of the product can be challenging. We documented 4/7 culture-positive products (*S. pyogenes, S. saccharolyticus, Propionibacterium* sp and *S. caprae*) in 2010. A common contamination-

source was deemed unlikely (different organisms). An in-depth Infection Control Review of the entire BM-harvesting process was undertaken to identify and eliminate possible risks of contamination.

Methods

The Infection Control Coordinator audited the entire harvesting protocol from the Operating Room (OR) to the final processing steps in the cellular therapy (CT) laboratory. Audit points included: Hand hygiene (HH), hub-cleaning, OR procedures (masks, surgical hand scrubs, harvest technique, transfer bags), storage temperatures, aseptic preparations and handling of BM products in laminar flow bio-safety cabinets. Results: User friendly standard operating procedures were created including a checklist to orient new staff and to remind staff who performed this task infrequently. Strict, frequent HH protocols were implemented, and cleaning and disinfecting processes were improved. A CT technologist implemented strategies to decrease distractions during product processing. The new protocols were approved by the CT staff and infection control. Since implementation, 3/3 harvests have shown no bacterial or fungal contamination.

Conclusion

An open, trusting relationship between infection control, OR and CT staff made it possible to improve our BM harvesting protocol at each step of the way, thereby decreasing contamination risks and increasing patient safety.

O3 A new model for hand hygiene campaign: experience from Egypt

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Introduction

HAI occur in about 10% of hospitalized patients and cause significant morbidity and mortality. The most common mode of transmission of pathogens in the hospitals is via hands of health care workers.

Aims

University Hospitals and the Naval Medical Research Unit in Egypt collaborated to introduce a pilot study that uses a new model for hand hygiene campaigns. Our objectives were to raise knowledge, increase attitude and increase the level of practice.

Interventions

international ideas were adapted to the Egyptian setting. Entertainment for education using printed and audio visual materials locally prepared using our HCW pictures and videos during work, contests events with prizes , Arabic short story telling sessions for the housekeepers and observation sessions include opportunities, steps and timing of hand hygiene.

Results

The compliance to hand hygiene was 29% done incorrectly and only 5% done correctly, 61% were after removal of gloves, the least was contact with the surroundings. There were multi-causes of inappropriate hand hygiene (56.7%), not all surface of the hands cleaned in 18.8% ,followed by inadequate drying of hands 14.5%. The mean knowledge scores of doctors (39.1%) were less than nurses (42%). There was a significant increase in the compliance of health care workers in the reassessment phase.

Conclusions

Implementation of Hand Hygiene monitoring and audits is mandatory, Entertainment for education, locally prepared poster with workers pictures, contests and telling stories using local language especially with low level educated house keepers make the participants more enthusiastic. Observation of detailed steps of hand hygiene may help to analyse the cause of incompliance.

O4 Microbial contanimation of dental student scrubs

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Introduction

Microorganisms can remain viable on clinical attire for extended periods. Our dental students purchase their own scrubs and are responsible for laundering them. They routinely wear the scrubs to and from school. Students wear disposable isolation gowns clinically with their scrubs underneath. The aim of this study was to measure microbial contamination present on scrubs exposed leg sections after use in the clinic.

Methods

Rodac plates containing mannitol salt and enhanced trypticase soy agar sampled eight sites from knee to cuff on 20 cotton scrub pants worn clinically for at least four hours. Colonies then underwent subculturing onto media selective for yeast, enteric rods, oral streptococci, and MRSA. After laundering by the students, sampling of the same pants occurred. Twenty professionally laundered scrub pants (ironed and returned in shrink-wrap plastic) underwent sampling.

Results

Every Rodac plate had microbial contamination with the highest levels being near/around the cuffs. Yeasts, enteric rods, oral streptococci were commonly present as were staphylococcal species. MRSA was present on six scrubs. Student laundering usually employed cold-water temperatures, no bleach, and mechanical drying. There was an average reduction of 81.5% in colony counts with elimination of yeasts, oral streptococci, and MRSA. Commercially laundered scrubs had minimal microbial contamination with staphylococci and gram-positive rods present.

Conclusions

Contamination by a variety of microorganisms occured on exposed scrubs leg areas. Student laundering did reduce levels of contamination even without the use of warm or hot water or bleach. Professionally laundered scrubs had less than 5% the level of contamination than did the student laundered scrubs.

Aosta Regional Hospital: glycerinated alcohol use, 2007-2010 O5

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Background

Glycerinated alcohol use is a good indicator of hand hygiene in health care settings; aim of our study was to check its use in years 2007-2010, during and just after Hospital implementation of WHO campaign: clean care is safer care.

Results

Alcohol use increased more than 20 folds during the follow-up period: from 45,8 liters nel 2007 up to 919,4 liters in 2010, yet very differently among wards. In particular, higher slopes were seen in high-users, compared to low-users wards: 7/11 (63.6%), vs. 4/11 (36,6%). In 2010 we also analyzed the ratio between admissions days (by ward) over alcohol use, thus standardizing use by ward activity. As expected the proposed index was better in the critical area (mean 5,31 days to use 100ml of product), followed by the surgical area (mean16,32, range 6,4-29,2) and by the medical area (mean 21,4, range 7,9-50). Finally, a inverse relation between the proposed index and hand hygiene adherence (also taken in 2010) was shown.

Conclusions

1- Increase in glycerinated alcohol use in our Hospital is quite patchy among wards. This allows to target interventions tailored to specific wards/settings. 2- Check of alcohol use may be a good proxy indicator of the quality of hand hygiene assessment inside Hospitals and devoids comparison to hospital acquired infections prevalence and multi-drug resistant germs circulation. 3- Finally, we stress that in-Hospital surveillance results should be splitted and reasoned at least at the department level.

O6 Comparison of procedures for controlling hot water *Legionella pneumophila* contamination in health structures

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In a big hospital of northern Italy colonized by *L. pneumophila*, the effectiveness of various procedures in controlling contamination and preventing case onset was evaluated. Application of superheating showed the lest capability in reducing Legionella and is not suitable for large buildings as flushing with water >60°C at each outlet cannot reliably be maintained. In emerging situations, shock hyperchlorination is preferable as a more effective germ reduction method although requires higher manpower and pipes corrosion cannot be excluded. Point-of-care filters achieve the goal of 100% negative samples, and are adopted where transplant, oncological and other high risk patients are hospitalized. Also electric boilers installed on cold water line in high risk patient rooms guarantee absence of contamination, provided that temperature is maintained above 58°C. Continuous treatment with chlorine dioxide is highly efficient in reducing germ concentration, but does not eradicate Legionella from the system, and at least 0.3 ppm at outlets are requested for the goal of *L. pneumophila* concentration below 100 cfu/L. More satisfactory results were obtained by injecting monochloramine, as control of contamination was evident just within the first month of application. Monochloramine level associated with germ below the detection limit approximate 3 ppm, but 2 ppm were sufficient for reducing legionellae below 100 cfu/L. Application of different procedures according to patient risk appear to be the best strategy and no cases of nosocomial Legionnaires' disease were detected in the hospital during the observation period.

O7 Efficacy of performance improvement collaborative: case study involving CLABSI prevention bundle...is a checklist sufficient?

Russell Olmsted

St. Joseph Mercy Health System (SJMHS), Ann Arbor, Michigan, USA

A December 10, 2007 article in The New Yorker magazine by Dr. Atul Gawande, a noted author and surgeon from Boston, MA, U.S., highlighted the work of a large performance improvement collaborative led by Dr. Peter Pronovost that was aimed at prevention of health care-associated infections (HAIs) in intensive care units in hospitals in the State of Michigan, U.S. This article asked how a simple checklist was able to achieve a 66% reduction in the incidence of central line associated bloodstream infections (CLABSIs) over the course of 18 months? The goals for this session will include an overview of the checklist, use of a collaborative framework for improving patient safety and the importance of scientific evidence as a foundation for this activity. While tools such as checklists are helpful, optimal prevention of HAIs involves engaging direct care providers to take prevention strategies directly to the patient's bedside and make it part of their daily care. The CLABSI prevention "bundle" that Dr. Pronovost's and his colleagues used involved simultaneous use of a combination of interventions such as hand hygiene, skin antisepsis, aseptic technique and high level of awareness of the presence of an invasive device. The foundation for the bundles however is really about engaging personnel and building an effective patient

care team. This session will include an example of a conceptual model for HAI prevention that draws on this teamwork concept and developing a high level of culture of safety to ensure a safe journey of the patient during their care. Is the checklist merely a topical, popular sound-bite? Perhaps and we'll also highlight limitations of the "checklist" that have been realized subsequent to use of these bundles. Please attend this session to learn more but importantly we'll learn much more by your willingness to share your insights on whether the collaborative model can be applied broadly across a range of countries for a variety of challenges we all face.

O8 The role of professional organizations in supporting infection preventionists with prevention bundles and beyond

Katrina Crist

Association for Professionals in Infection Control, Washington DC, USA

Nonprofit professional organizations play a unique role in supporting and advancing a particular field. They do not exist alone; they have a complex, interdependent relationship with other nonprofit organizations, corporate industry and government. This presentation explores the dynamics of these relationships and highlights specific areas of support to infection preventionists in relation to prevention bundles aimed at stopping central line-associated bloodstream infection, catheter-associated UTI, ventilator-associated pneumonia and more.

O9 Application of device-associated infection prevention bundles: managing expectations when facility-specific resources are limited

Nizam Damani

Craigavon Area Hospital, Portadown, Northern Ireland, UK

It has now been recognized that a substantial reduction in Healthcare Associated Infections (HAI) can only be achieved through using various multi-modal infection control interventions using the best practices. In 2006, Institute of Health Improvement in the USA started a 100,000 Lives Campaign (now 5 million Lives Campaign) using a 'Care Bundle' approach.

A 'Bundle' is defined as a group of best practices which will individually improve care, but when applied together result in substantially reduction in healthcare associated infections. For successful outcome, it is essential that each patient receives *all* the elements of the 'Care Bundle' to reduce healthcare associated infections.

The 'bundle approach' to reduce device-associated infections has been successfully implemented mainly in developed countries. This presentation will give you an overview of the concepts of the 'Care Bundle' approach, and will discuss and highlight the issues relating to the bundle implementation both in high and low resources settings and discuss a way forward on how to implement device-associated bundles in countries especially in limited resource countries.

Low endemic countries: what is being done right? O10

Egil Lingaas

University Hospital, Oslo, Norway

According to the European Centre of Disease Control, the prevalence of methicillin resitance among invasive isolates of *Staphylococcus aureus* is grouped in 6 categories; < 1%, 1 - <5%, 5 - <10%, 10 - <25%, 25 - <50% and ≥ 50%. Low endemicity is not defined, but for the purpose of this presentation countries with an MRSA prevalence of less than 5 % are regarded as low endemic countries. In 2009 this included Iceland, Netherlands and Norway with less than 1 % and Denmark, Estonia, Finland, and Sweden in the 1 - > 5 % category. According to the European Surveillance of Antibiotic Consumption, these countries are also among those with the lowest human consumption of antimicrobial agents measured as Defined Daily Dosages per 1000 inhabitants per day (DID). With the exception of Iceland, all the other 5 countries reported antibiotic consumption in ambulatory care which

was lower than the median of 20.56 DID among 31 European countries.

Most of these countries for many years also have been practicing pre-emptive isolation and screening for MRSA of selected patient groups at hospital admission, especially patients previously hospitalised abroad. This policy has been named the "search and destroy" policy.

The search and destroy policy has also been applied for patients and healthcare workers after exposure to patients in whom MRSA was unexpectedly detected in clinical samples. In Norway, health personnel are required by law to be screened for MRSA after working abroad, before starting work in domestic healthcare.

O11 Getting lower: what has been effective?

Judith Richards

Norfolk and Norwich University Hospital, Norwich, UK

In the late 1990's the United Kingdom was considered to be the "dirty man of Europe", as the rates of MRSA colonisation, infections and deaths continued to rise. Government initiatives included the introduction of mandatory reporting of all blood stream infections (BSIs), and deaths due to MRSA, as well as a programme of targeted reductions, with the aim of achieving a 50% reduction across the whole of England in 5 years. Reviewing the interventions that have been advocated across the globe, 4 key elements are identified as essential: the prevention of antibiotic resistance by careful antimicrobial stewardship measures; the use of surveillance measures to detect, isolate and decolonize carriers; careful hand and environmetal hygiene and appropiate treatment of infected cases. Although good evidence is emerging for most of these measures, not all of them are applicable to all settings, and some are still the subject of debates. Careful root cause analysis to identify areas of high infection rates within individual hospital settings, followed by the introduction of targeted measures specific to those units are identified as producing the fastest, most cost effective results. The original targets have now been achieved. The cost effectiveness of further mandatory measures, against arguments of "irreducible minimums" need to be explored.

High endemic regions: what can be the game changer? O12

Michael Borg

Mater Dei Hospital, Msida, Malta

The European region shows a distinct geographical pattern of MRSA epidemiology. The countries in the North of Europe have consistently shown low MRSA prevalence. This then increases as one moves down the countries of the European region and reaches its highest level in the countries of the Mediterranean. Indeed data from the EARSS and now EARS-NET network show that Portugal, Spain, Italy, Greece, Malta, Croatia and Cyprus all have MRSA bacteraemia proportions in access of 25% and are the highest within the region.

Several studies have been undertaken to identify the cause of this particular epidemiological picture. Several conclusions have been put forward which point towards constitution of infection control teams, compliance with infection prevention policies as well as levels of antibiotic consumption as being the key drivers. Nevertheless, despite pan European efforts and increased emphasis on healthcare infection prevention and control, spearheaded by the European commission, there has been little significant improvement in MRSA levels in Mediterranean countries over the past decade. What are the bottlenecks towards replicating the success of countries such as the UK and Ireland which have made massive improvements in the past few years? Do we need to start thinking beyond the obvious infection prevention that we normally focus upon?

O13 Structures of hospital hygiene and infection control in Europe – an overview

Rose Gallagher

Royal College of Nursing, London, UK

A review of national structures and strategies for infection prevention and control (IPC) was undertaken at a meeting of the European Network for Infection Control and Patient Safety ('the European network') in advance of the publication of the European Recommendation for Patient Safety and Infection Control in June 2009.

16 countries within 'the network' responded to the survey focusing on the structure of IPC at local level (specialist and support staff) and regulatory and statutory frameworks supporting IPC at the national level. Standards for the notification of infectious disease, mandatory surveillance and levels of media interest were also included.

The results showed that whilst specialist infection control /hospital hygiene staff were in place in all respondent counties, the ratio of dedicated staff to in-patient beds and use of link staff varied. Notification of infectious diseases to state institutions occurred in all countries but reporting of MRSA (used as an example of a high profile HCAI) and local surveillance varied. This small survey highlighted interesting variations and approaches to IPC across 16 countries. Whilst it is impossible to identify specific approaches that produce demonstrable reductions in HCAI's it is clear that with free movement of healthcare staff and patients across European borders, patient and staff expectations of 'quality and safe care' will vary considerably. This may impact on both knowledge and standards of care by staff and the level to which HCAI's are viewed by the media and patient advocacy groups and future expression at the political policy level.

O14 The new national law in Germany and its implications

Walter Popp

University Hospital Essen, Germany

In last years, in Germany media more and more reported about nosocomial infections and hospital hygiene. Also politicians got active and a new national law about hospital hygiene passed parliament in midth of 2011. The main contents of this law are:

- A commission on national level will be established caring for antibiotics usage and giving recommendations.
- The recommendations of this commission as well as the elder commission for hospital hygiene get mandatory for all hospitals.
- The recommendations of both commissions have to be updated according to new knowledge regularly.
- The main responsibilty for hospital hygiene is with the directors of hospitals.
- Data about nosocomial infections, multiresistant bacteria and antibiotic usage have to be analysed and conclusions have to be drawn as well as necessary changes in behaviour of staff.
- All German states have to make regulations on hospital hygiene on basis of the national law.
- A fulltime hygiene doctor is necessary for all hospitals with more than 400 beds and a fulltime hygiene nurse for around 150-200 beds.
- Link nurses and doctors have to be established.
- On national level, hygiene indicators have to be defined to make hospitals comparable for patients.

O15 Cleaning and disinfection in hospitals in Europe – an overview

Leif Percival Anderson[1], Dorris Laugesen[2], Annette Block[2]

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[2]Danish Society for Infection Control Nurses and EUNETIPS

Cleaning and disinfection has become one of the major issues in preventing spread of pathogenic microorganisms in hospitals and thereby prevention of nosocomial infections.

The aim of this study was to clarify how cleaning and disinfection was organized and controlled in hospitals in Europe. This was done by a questionnaire which also included how cleaning and disinfection was done in practice.

The questionnaire was send to all European countries represented in the EUNETIPS network and included four major sections: 1) Standards/Guidelines, 2) Cleaning, 3) Disinfection and 4) control of cleaning and disinfection.

Fourteen countries answered the questionnaire. Nine of fourteen countries had national standards or guidelines for cleaning and disinfection but only one country had national standards or guidelines for IT equipment. Eight countries had risk assessment and plans included in their guidelines.

Eleven countries used cloth, mops or both for cleaning. These countries used cotton, synthetic- or microfibers. Eleven countries used water and soap for cleaning.

Eight countries used disinfection before operation in operating theaters, eleven countries disinfected rooms during and after isolation for infection diseases but only three countries disinfected the rooms before protecting isolation. Eleven countries disinfected equipment after use for patients. Twelve countries used cloth with disinfectants for disinfection. The most common used disinfectants were alcohols (13 countries) and oxidants (11 countries). Less than half of the countries had procedures for disinfection in special situations (*C. difficile*, MRSA etc.).

Internal audit or self-control was most commonly used (11 countries) for control of cleaning and disinfection. This control was done visually and only five countries used additional methods (germ count or protein measurements). Eleven countries had a follow up on the results.

In conclusion the policy and practice for cleaning and disinfection in Europe is rather uniform and European standards may be preferable or at least a European educational program on cleaning and disinfection.

O16 Education and training of infection control professionals in Europe: do we need to start thinking outside the box?

Silvio Brusaferro

University of Udine, Italy

Many differences exist throughout Europe in the way health care is organized; they include healthcare professionals education and training in pre graduation courses and along their professional career.

The state of the art of training Infection Control/Hospital Hygiene Practitioners (IC/HHP) shows that there are many critical "boxes" (i.e. national differences in training healthcare professionals, different investments in human resources in HAI prevention and control, different IC/HHP practitioners national training systems, different approaches to patient safety) that should be opened and interlinked, at least partially, to guarantee a safer care throughout Europe.

We know there are many training initiatives in many Countries differing by length and contents but a more complex and coordinated action is needed to increase the number of delivered programs, to standardise them, to check their quality and their outcomes included the evaluation if they will be employed in this field.

But training IC/HHP is not enough. To change the scenario in the future we need to embed the training on quality, patient safety and HAI prevention and control in the medical, nursing and other health professional schools as well as in continuous professional education programs as emphasised by WHO, ECDC and, last September, by the Expert conference on education in quality care and patient safety held in Krakow.

O17 Motion: Mandatory reporting and targets for infection reduction are effective

Pro: *Martin Kiernan*

Southport and Ormskirk Hospital NHS Trust, UK

Con: *Thomas Haustein*

Geneva University Hospitals, Switzerland

Mandatory reporting and targets for infection reduction have been much talked about and introduced in several countries in recent years. A number of success stories have been cited. Is there convincing evidence for a direct effect of these measures? Are there any serious risks are associated with public reporting and performance management based on specific indicators? A better understanding of these issues is required before the introduction of mandatory reporting and targets on a wider European and global scale. The two speakers will debate these and other arguments in favour and against the subject.

O18 Achieving an effective HCAI audit and feedback cycle for infection prevention and control

Carol Goldman[1], Donna Moralejo[2], Donna Wiens[3]

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Infection Control Professionals are increasingly using auditing as a tool for identifying concerns or monitoring practice in order to improve patient care and/or healthcare worker safety. The audit process involves a systematic approach to developing the audit tools, collecting and analyzing data, and developing recommendations. In this workshop, we will review key aspects of the audit and feedback cycle, including:

- Choosing what to audit
- Developing/choosing audit criteria and tools
- Characteristics of a "good" audit tool
- Data collection methods (document reviews, staff interviews, observational tours)
- Analyzing and interpreting results

Reporting findings and recommendations

Closing the loop: follow up activities

The key concepts will be presented by the speakers, and then illustrated through a series of short exercises. Working in small groups, the workshop participants will have the opportunity to practice and discuss appraisal of criteria, application of selected audit criteria to a particular scenario, and interpretation of results.

Understanding the entire cycle will promote more effective audits and use of their results, thereby improving healthcare practice and patient care.

Some real experiences with copper alloys in the healthcare setting O19

Shaheen Mehtar

Tygerberg Hospital and Faculty of Health Sciences, Stellenbosch University, Cape Town, South Africa

The antimicrobial activity of copper has been known and harnessed through the ages. Today, modern medicine coupled the extensive use and abuse of antimicrobial agents has resulted in formidable healthcare associated (HA) pathogens. The main route of transmission in healthcare associated infection (HAI) is recognised as being from hands of healthcare workers or patients. Touch surfaces in the healthcare environment become readily colonised with environmental and HA pathogens. In vitro studies with copper and its alloys have shown remarkable microbicidal activity against common pathogens. Further studies have shown that copper alloy touch

surfaces reduce transmission and thus infection by statistically significant proportions compared with stainless steel or melamine surfaces. Our study proved just this in a busy community day hospital where two similar consulting rooms were compared- one with copper alloy touch surfaces (study) and the other without (control). The reduction in the total counts as well as gram positive microbes was statistically significant. How can this remarkable effect be used in the healthcare setting to reduce HAI transmission? The possibility of its use in ventilation systems, surgical instruments and other medical devices should be considered. In areas where water supplies are erratic, healthcare facilities is a further option. The suppression of growth effect of copper alloys on *Mycobacterium tuberculosis* has been reported. Studies in this respect, particularly for low income countries are warranted.

O20 Can there be a link between relatively small-scale intervention with copper and rates of HCAIs?

Tom Elliott

University Hospitals Birmingham NHS Foundation Trust, UK

Clinical trials have shown consistent and continuous reduction in contamination levels on copper surfaces to levels below proposed standards. Moreover, the link between this type of relatively small scale intervention and HCAIs has been reported in a recent three centre clinical trial.

O21 Practical aspects of deploying copper

Mark Tur

Copper Development Association, UK

Evidence from clinical trials has led to adoption of copper touch surfaces in hospitals and other care settings. These interventions can be simple and cost-effective.

O22 Prevention of healthcare associated bloodstream infections

Michael Borg[1], Cheryl Etches[2]

[1]*Mater Dei Hospital, Msida, Malta*

[2]*Royal Wolverhampton Hospitals NHS Trust, UK*

This workshop will review aimed at prevention and control of bacteraemia, especially those cause by MRSA. The workshop will present preliminary data from the Implement project – an EU funded study. This project has undertaken a comprehensive survey of European hospitals to identify infection control practices and activities and in so doing attempt to correlate and identify indicators of good practice related to control of MRSA bacteraemia. The workshop will facilitate interactive discussion amongst participants on best practices in surveillance, high impact interventions such as bundles, antibiotic management, hand hygiene, environmental cleaning etc. Successful interventions from hospitals which have drastically reduced their MRSA levels will also be presented as possible templates for other institutions to adapt.

O23 Global networking in infection prevention and control

Sergey Eremin

World Health Organization, Geneva, Switzerland

The workshop, which is a good networking opportunity in itself, is intended to exchange ideas about present and future of global networking in infection prevention and control (IPC) in healthcare. Three examples of IPC networks will be presented and discussed.

The Global Infection Prevention and Control Network (GIPCN) was launched to assist the World Health Organization in providing technical IPC support to Member States through broad dissemination of WHO IPC policies and guidance documents and to contribute to WHO efforts to respond to communicable disease crisis, outbreaks or epidemics that originate in or are

amplified by the provision of care in HC setting. The Safe Injection Global Network (SIGN) is a voluntary coalition of stakeholders aiming to achieve safe and appropriate use of injections throughout the world. And the Baltic Antibiotic collaborative Network (BARN) provides a common platform for existing and new initiatives and networks active around the Baltic Sea to facilitate interaction and cooperation aiming to counteract the negative effects of antibiotic resistance.

O24 Old and new emerging waterborne opportunistic pathogens: epidemiological facts

Philippe Hartemann

University Hospital, Nancy, France

Abstract not available

O25 Strategies for monitoring and control microbial risks in healthcare

Martin Exner

University of Bonn, Germany

Abstract not available

O26 Integration of the new concepts in the strategies in developing countries

Thouraya Annabi Attia

Ministry of Public Health, Tunisia

Actually living an epidemic transition period, Tunisia is also in political transition. An important reform has started in the health care orientation by implementing stronger social insurance with a less governmental intervention in the management of the system and an orientation towards "offshore medicine". An upgrading program for hospitals was carried out based mainly on "financial" criteria but with no new conception regarding quality and safety of healthcare. Considering that the existing legislative framework needs to be updated (mandatory system), we worked on building some voluntary preventive systems on Hospital Hygiene (HH). We started in 2005 by building a "HH strategy" using a participative method and based on consensus around right definition of the concepts (decision makers and health care personnel have to be convinced by objectives of the HH and the central place of Nosocomial infection).

That pointed out the main lacks of the actual system as a whole, but especially concerning water. In national regulations there is no "hospital water" notion, the only mandatory indicators are made for drinking water or swimming water control. Lots of efforts are done using a referential document on water quality in healthcare, based on an ongoing program of IFOWAHB (International Forum on Hygiene in Buildings). This program targets new organization based on water safety plan and surveillance of water quality and Nosocomial infections. Such project needs some prerequisites like training and lab capacities enhancing. The legal framework has to be upgraded and a formal water quality typology implemented. On this, we are trying to work together with three countries of Maghreb using a regional expert panel.

Safe childbirth O27

Mary Catlin

Seattle, Washington, USA

The mission of the Safe Childbirth Special Interest Group (SIG) is to link members and their societies with information and with others working to make childbirth safer for mothers and children.

FRIDAY

O28 Home hygiene - the next infection prevention challenge

Sally Bloomfield

London School of Hygiene and Tropical Medicine, UK

A range of recent events have raised awareness that home and everyday life hygiene is a key part of public health strategy to reduce infectious disease. Governments, under pressure to fund healthcare, are looking at prevention as a means to reduce health spending. Increased homecare is one approach, but gains are likely to be undermined by inadequate infection control at home. Prevention through hygiene is also now recognised as a strategy to reduce antibiotic prescribing and the spread of resistant strains in the community. At present no single authority takes responsibility for promoting good hygiene in the home is becoming the weak link in the chain. If hygiene promotion and practice in home and everyday life settings is to be successful, an effective and sustainable code of hygiene practice that deal with all areas of human activity including home and everyday life settings is required, which can be used to break the chain of infection transmission in these settings. 'Targeted hygiene' is a risk-based approach developed by the IFH and is the first comprehensive code of practice, based upon scientific data, to address the needs of the home and related community settings. Targeted hygiene also provides a framework for developing sustainable codes of hygiene practice. In this session we will outline these issues in more detail and discuss how we might address the need is for a more integrated infection control strategy considering home, hospital and community transmission.

Hand-washing behavior: survey analysis and insiders view O29

Sergejs Kuznecovs, Galina Kuznecova, Ivans Kuznecovs

Preventive Medicine Institute, Riga, Latvia

Objectives

Health care-associated infection in hospitals is a major cause of morbidity and mortality, and effective hand hygiene is the best ways to prevent it.
The aim of the present study is to check the reality in hand-washing behaviour among doctors, nurses and medical students and to show what should be changed in health care workers education to increase hand hygiene.

Methods

A questionnaire-based survey was carried out anonymously in comparison to method of insiders view among 254 nurses, 242 physicians and 100 medical students in Latvia to identify and quantify factors that affect the hand washing behaviour. Groups were asked to answer in free form with regard to failing or neglecting to wash their hands when they should have done so. The questionnaire included details of the situations in which physicians and nurses neglected to wash their hands were classified into the five categories described in Japan study in 2002.

Results

128 nurses (50,3%), 180 physicians (74,3%) and 83% of students neglected to wash their hands when they should have done so. Among them "was too busy" were 102 (79,6%) nurses, 115 (63,8%) physicians and 76% of students, "forgot" 9 (7%) nurses, 24 (13%) physicians and 4% of students, "do not recognize the necessity" 2 (1,5%) nurses and 1 (0,05%) physicians, 1% of students; "did not find facility for washing hands" 3(1,6%) nurses 8 (4,4%) physicians and 2% of students; "use gloves instead of washing hands"11 (8,5 %) nurses and 32 (17,7%) physicians. The category "was to busy" analyzed by insiders view method. The results: 64% do not recognize the necessity. Presented results show hand-washing neglecting due to the lack of attention to hygiene among doctors of internal medicine specialities working with medical students

Conclusions

The questionnaire-based surveys for hand-washing in hospitals could be supplemented by insiders views. To improve hand hygiene educational and psychological factors must be considered: including motivation, recognition and behaviour, knowledge in clinical microbiology and infectious diseases. Hospitals need to develop and implement innovative educational programmes for students and motivational courses tailored to physicians working with students.

O30 Assessment of tuberculosis infection control practices at Infectious Diseases Hospital, IDH, Kano, Nigeria

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Aims

To asses TB infection control practices of health care workers working at the TB wards of the hospital.

Methods

Hospital staffs working in the 6 TB wards of the hospital were interviewed using a designed questioner for TB infection control practices. The focus of the question were on 3 ways in which the risk of TB infection can be reduced these includes work practice or administrative control measures, environmental control measures and the use of protective wears (respirators). Observation were also done in all the TB wards of the hospital.

Results

A total of 80 health care workers were interviewed. Only 43 %(34) of the health care workers reported to have had infection control training and, 95% (76) were always involved in giving health education to patients on cough etiquette and hygiene There was no documented TB infection control policy and standard operating procedures in the 6 wards, but all the wards were using the Nigerian national guidelines for TB infection control. 67% (4) of the wards had poor environmental control measures. Surgical mask were not available for the TB patients and suspect, and no N95 respirators were available for the health care workers.

Conclusion

TB infection control in TB health centers appears to be inadequate and there is need for strengthening and intensification of infection control measures in these health facilities that will includes administrative and good environmental measures and the use of N95 respirators and mask for health care workers and TB patients/suspects respectively. TB infection control should also not be viewed as an isolated intervention; rather it is part of general infection prevention and control (IPC)

Prevention of catheter associated bloodstream infections: the road to safer patient care O31

Ermira Tartari Bonnici

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Introduction

Intravenous catheterisation is the most common procedure in hospitalized patients yet the procedure is not without risks. Between 2.3% and 67% of patients develop thrombophlebitis, which in turn is a major predisposing factor for bloodstream infections, especially caused by *Staphylococcus aureus*. However a care bundle of simple preventative measures can reduce these complications.

Interventions

This interventional study was conducted in three medical wards in Mater Dei Hospital, Malta - a tertiary care facility with 825 beds - and undertaken between October 2010 and February 2011. The insertion of a peripheral vascular cannula (PVC) upon hospital admission is common practice in our hospital, which is characterised by high bed occupancy in excess of 95% and low nurse to patient ratios. No standard documentation or policy of routine site assessment was in place at the start of the study.

In the pre-intervention phase a total of 132 peripheral cannulae were assessed visually by a trained infection control nurse, using the Visual Infusion Phlebitis (VIP) scale to determine the degree of associated erythema, swelling or vein occlusion. No patient was audited on more than one occasion unless a new catheter had been inserted in a different peripheral site. Data collected included length of insertion, VIP score and dressing quality. Dates of insertion and removal were determined from the medical notes and by questioning of nursing/medical staff and patients. On examination of the catheter insertion site, phlebitis was diagnosed when two or more of the following signs were present: erythema, swelling, tenderness or pain, warmth, or cord induration at the catheter trajectory. Catheters were left in place unless a complication was identified. Following the pre-intervention baseline assessment, a policy of daily PVC assessment was introduced and educational sessions were organized for ward staff; these included training on VIP score assessment. A new form was introduced containing details of insertion, removal and daily VIP scores together with routine scheduled replacement of PVC after 72 hrs, unless contraindicated. Phlebitis was defined as a VIP score >1. In the post-intervention phase, 153 peripheral cannulas were audited by the same individual.

O32 Air conditioning units as potential source for contaminating operation theater environment – need to educate healthcare establishments

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Introduction

Five cases of post cataract endophthalmitis were reported from an ophthalmic hospital. Twelve patients were operated for cataract in the same operation theater in the same week. Thus a cluster of infection was identified for further study. Clinical picture in all affected patients was suggestive of fungal endophthalmitis. The operation theater is located in an area near Pune which is having high humidity nearly all round the year. The theater had a window type air conditioner. Air conditioning unit may act as potential source for growth and dispersal of fungi in operating room's environment resulting in postoperative infections. Several operating rooms could be facing this problem of fungi contaminating the operating environment and resulting in some cases of post operative infections which may or may not be reported as fungal infections usually present as delayed infections as compared to bacterial infections.

Methods

On evaluation of operation-theater complex, fungal spores were demonstrable from environment and surfaces. Air conditioner's filters were grossly contaminated. *Aspergillus* and *Mucor* Spp. were isolated. Phenotypically similar fungi (*Aspergillus* Spp. from two and Mucor Spp. from one) were isolated from three of the patients – anterior chamber fluid evaluation. Twenty five hospitals from Pune were inducted into a study consisting of evaluating the environment of operation theaters for fungal contamination. The environment and filters of the air conditioning devices in operating rooms of hospitals in study group were evaluated once in three months for two years.

Results

The vision of three patients followed in the study improved significantly after vitrectomy and anti-fungal therapy. In the follow up study it was demonstrated that the incidence of fungal contamination of the filters in the twenty-five hospitals studied varied from 5% to 26% depending upon the season and humidity. The rate was more after the monsoon months during these months the humidity is high and the temperature is also high. The results of this study were used to educate the hospitals about need for routine cleaning and disinfection of gadgets like air conditioners.

Conclusion

Postoperative fungal infections are difficult to manage. The Air conditioners and dehumidifiers used in operation theaters should be meticulously disinfected and frequently monitored to minimize the chances of proliferation and dispersal of potentially pathogenic fungi.

O33 Reduction in diseases from clostridium difficile in hospitals: impact of a multimodal strategy

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Introduction

Clostridium difficile is an important pathogen in hospital wards, it provokes disease also with serious connotations and its cost, from the point of view of the patient's health, is very high. Because of its ways of transmission it is also a marker of the degree of adherence of the environmental hygiene and isolation procedures.

Aims

1. Reduction of the diseases from CD, reduction in the times of hospitalization and connected costs;
2. Evaluate the degree of use of the procedures of isolation;
3. Standardize the use of ATB therapy.

Methodology

From the analysis of the Microbiology Control , already operating since 1999, in the last few years an increase of CD isolation has been seen. Since 2007, The CIO operative team has planned a series of interventions, training audit for all the staff, with a spread of a specific protocol. During the last 18 months the use of isolation measures has been carefully evaluated in wards.

Results of monitoring: 2007: case prevalence percentage 5.7 ‰; 2008: 4.7‰; 2009: 8.85‰; 2010: 4.5‰. The first months of 2011, show a decrease in the impact, too.

Conclusions

The staff participation of operators in the meetings was of 90%. The decrease in the prevalence percentage corresponds to the periods following the staff meetings, so it is supposed that such meetings should be repeated at regular intervals. Such a need comes from the staff turnover and from the structural lacks of those wards which make more difficult the optimal adherence of isolation measures.

O34 Infection control in a medical ICU with 50 beds in resource-limiting settings: significant reduction of nosocomial infection rates

Zhiyong Zong, Dan Pu

West China Hospital of Sichuan University, Chengdu, China

Infection control in ICU is challenging, particularly in resource-limiting settings. West China Hospital is an extremely large university hospital with 4,400 beds and serves as the referral center in western China, an underdeveloped region. There are a few ICU in our hospital including a 50-bed medical ICU. This ICU is crowded, has a low nurse-bed ratio and is associated with high prevalence of nosocomial infections such as VAP and CRBSI, making infection control extremely difficult. To strengthen infection control, an infection control practitioner worked in ICU as a full-time staff there and an infectious diseases physician worked in ICU two hours daily for antimicrobial stewardship since September 2010. Measures including comprehensive education, strengthened hand hygiene, prevention bundles adapted from American guidelines and regular feedback were implemented but the ward setting and nurse-bed ration remain the same. Infections were monitored on the daily basis and rates including those of VAP, CRBSI and CAUTI were calculated monthly. Compared to rates before intervention, the overall nosocomial infection rates have dropped 26% and 38%, calculated based on infected cases and events, respectively. The rates calculated based on cases and events per 1000 ICU-stay days have dropped 53% and 58%, respectively. Significant reductions were also seen in VAP and CAUTI rates (drop of 68% and 70%, respectively) but not present in CRBSI. Our

study demonstrated that in a resource-limiting setting, the implementation of common measures could significantly minimize nosocomial infection, although further redution might require changes in ward settings and improvement of nurse-bed ratio.

O35 A legal framework for the prevention and control of infection

Carole Fry

Department of Health, London, UK

Background

An assessment of the impact of introducing of a statutory Code of Practice on the prevention and control of infection to the National Health Service (NHS) in England and mandatory surveillance of Meticillin resistant *Staphylococcus aureus* (MRSA) bacteraemias and *Clostridium difficile* infections (CDI) combined with Government infection reduction targets.

Objectives

(1) Has the introduction of the Code of Practice improved the infection prevention and control of infection in England?

(2) Has mandatory surveillance and Government infection reduction targets reduced the incidence of MRSA bacteraemias and CDI?

Methods

NHS organisations have to declare whether they are fully compliant with the 10 criteria in the Code of Practice for the prevention and control of HCAI which expects these organisations to have systems in place for the prevention and control of infection, which includes:

- leadership,
- management arrangements,
- design and maintenance of the environment and devices,
- application of evidence based protocols,
- education and training
- information and communication.

These data are sent to the Care Quality Commission (CQC) who adjudicates whether the NHS organisation can be fully registered or registered with conditions. The CQC have the power to inspect NHS organisations and can suspend registration or issue financial penalties.

All acute hospitals are required to submit data on MRSA bacteraemias and CDI monthly to the Health Protection Agency (HPA), who publish these data on behalf of the Department of Health. MRSA bacteraemias and CDI are both the subject of national Government infection reduction targets.

Results

CQC published an overview of 2010/11 of NHS performance and recorded that 83% of NHS organisations were compliant with the Code and that there were minor concerns with 13% of organisations. Since the introduction of the 50% infection reduction target for MRSA bacteraemias, there has been a decrease in excess of 82% of the cases of this infection reported to the HPA. Data for previous years shows that these infections mainly affect the elderly, men (65% patients), those with predisposing morbidities and those undergoing medical procedures. Since the introduction of an infection reduction target in 2007/8, there has been a 62% reduction in the cases of CDI reported for all patients aged two years or over.

Conclusions

The introduction of Government initiatives has had a positive impact on patient safety in respect to HCAI. A reduction in the incidence of MRSA bacteraemias and CDI has been seen. There has been continuous improvement in compliance to the Code of Practice on HCAI by the NHS across most sectors.

O36 Universal MRSA screening – does the burden caused to healthcare institutions benefit the patient?

Gary French

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Screening identifies patients who are asymptomatically colonised by MRSA. These patients are (1) at risk of transferring MRSA to others and (2) at risk of developing endogenous MRSA infection of their own surgical wounds, vascular catheter sites or other lesions. Isolation of colinised patients, topical decontamination and the use of specific anti-MRSA surgical antibiotic prophylaxis theoretically can reduce the risk of transmission and endogenous MRSA infection.

Screening of patients (and sometimes staff) can be done on wards during outbreaks or at patient admission. Because of the delay in getting screening results and implementing decontamination, for elective surgical patients, screening is best done in pre-admission clinics.

Screening is costly and is not 100% specific or sensitive. Methods to improve yields or increase speed of results incur additional costs. As carriage rates at admission fall, positive predictive values of screening tests also fall. There is limited information on admission carriage rates and the clinical effectiveness of MRSA screening programmes.

There is therefore considerable debate on the cost-effectiveness of MRSA admission screening and whether this should be universal or targeted at those patients at high risk of carriage and/or at high risk of serious consequences of MRSA infection. Targeted strategies are becoming compromised by the emergence of CA-MRSA in patients without traditional risk factors for MRSA carriage.

In England, universal MRSA screening of all patients at hospital admission is now mandatory. This presentation will review the evidence for the cost effectiveness of different MRSA screening strategies.

Clostridium difficile infection – a whole system approach to reducing infection rates? O37

Tim Boswell

Nottingham University Hospital, UK

Abstract not available

A sustainable approach to infection prevention in long term care facilities O38

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Healthcare associated infections in the elderly population are an important public health problem worldwide and of increasing interest to politicians, patients and to the general public. Long Term Care Facilities (LTCF) residents have a risk of developing health care-associated infections (HCAI) that approaches that seen in acute care hospital patients and the infections are increasingly caused by antimicrobial resistant microorganisms. Furthermore, there are many challenges to the implementation of effective infection and surveillance control programs in LTCFs, also due to the scarcity of resources, such as personnel, expertise, and diagnostic and supportive services, and no or poor coordination of medical care.

Recent European-wide projects (ie IPSE Project and HALT Project) have illustrated the status of HAI prevention, control, and surveillance programs in European LTCFs, highlighting a significant variability in residents and organization type across Europe, the lack of perception of the relevance of HAIs, and a widespread scarcity of infection control resources.

To improve LTCFs residents safety, basic interventions which may be carried in each long-term care setting and type of facility, should be identified: these include basic infrastructure for infection control, relying on available resources; carrying out surveillance, using simple and cheap methods; focusing on cost-effective interventions with the aim of reducing the risk of

antimicrobial resistance spread and cross-infections. The presentation will focus on the these interventions, providing a framework for sustainable infection prevention in LTCFs.

O39 What is sustainable in hospital hygiene?

Gaetano Privitera

University of Pisa, Italy

Abstract not available

O40 Tackling multi drug resistant organisms: sustainable approaches in developed countries

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Catholic University of the Sacred Heart, Rome, Italy

Nosocomial infections caused by antibiotic-resistant bacteria are associated with high morbidity and mortality worldwide. Most prevention strategies focus on cross-transmission, but the endemic state inside the hospital is also maintained through the influx of patients colonised or infected with antibioticresistant bacteria, balanced by the efflux of colonised patients following discharge. Epidemiological research has demonstrated that eradication can be achieved by preventing the influx of resistant bacteria. The presence of a central venous catheter and a history of methicillin-resistant *Staphylococcus aureus* (MRSA) infection or colonisation are significantly associated with methicillin-resistant staphylococcal bacteraemia at admission. Previous antibiotic therapy and admission from long-term care facilities or nursing homes are associated with bacteraemia caused by methicillin-resistant coagulase negative staphylocci, while skin ulcer and cellulites are independent risk factors for MRSA bacteraemia. A scoring system using point values was developed and validated to identify patients positive for vancomycin-resistant enterococci at admission. Six variables were identified: age > 60 years (2 points); hospitalisation in the previous year (3); use of two or more antibiotics during the previous 30 days (3); transfer from another hospital or long-term care facility (3); a requirement for chronic haemodialysis (2); and a previous history of MRSA infection (4). With a point score cut-off of ‡ 10, the specificity of this prediction rule is 98%. Knowledge of variables identifying patients at high risk for being colonised or infected with antibiotic-resistant bacteria may assist clinicians in targeting preventive measures and streamlining the use of vancomycin. Current studies are analysing risk factors for harbouring multiresistant Gram-negative bacteria at hospital admission

Healthcare associated outbreaks of viral hepatitis O41

Barbara Soule

Joint Commission International, Oak Brook, Illinois, USA

This presentation will review several significant outbreaks of hepatitis and explore trends in causative factors and prevention strategies. The presentation will summarize the most effective interventions and lessons learned from the outbreaks.

Prion diseases: current and future challenges O42

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University of North Carolina (UNC) Health Care System and UNC School of Medicine, Chapel Hill, North Carolina, USA

Prion diseases such as Creutzfeldt-Jakob disease (CJD) represent a unique infection control problem as prions exhibit an unusual resistance to conventional chemical and physical decontamination methods. Iatrogenic CJD has been described in humans in three circumstances: after patients received hormone therapy (e.g., human growth hormone); after patients received an implant of contaminated grafts from humans (e.g., cornea, dura mater); and after use of contaminated medical equipment on patients undergoing intracranial placement of contaminated EEG electrodes (2 cases) and neurosurgical procedures (4 suspected cases). This presentation will review the precautions needed to prevent transmission via prion-contaminated surgical instruments.

The high resistance of prions to standard sterilization methods warrants special procedures in the reprocessing of surgical instruments. Special prion reprocessing is necessary when reprocessing critical or semicritical instruments/devices that have contact with high-risk tissue (i.e., brain, spinal cord, eye) from high-risk patients (e.g., known or suspected CJD). After the device is clean, it should be sterilized by either autoclaving (i.e., steam sterilization) or using a combination of sodium hydroxide and autoclaving, using one of the four options below:

Option 1 autoclave at 134°C for ≥18 minutes in a prevacuum sterilizer; or

Option 2 autoclave at 132°C for 1 hour in a gravity displacement sterilizer; or

Option 3 immerse in 1N NaOH [1N NaOH is a solution of 40 g NaOH in 1 liter of water] for 1 hour; remove and rinse in water, then transfer to an open pan and autoclave [121°C gravity displacement or 134°C porous or prevacuum sterilizer] for 1 hour; or

Option 4 immerse instruments in 1N NaOH for 1 hour and heat in a gravity displacement sterilizer at 121°C for 30 minutes.

It is essential with any sterilization process, and especially prion-contaminated devices, that the instrument is fully accessible to the sterilant (e.g., steam). Prion-contaminated medical/surgical devices that are impossible to clean or fully expose to steam and other sterilants should be discarded. Flash sterilization should not be used for reprocessing. Always discard single-use devices. There are no antimicrobial products registered by the EPA specifically for inactivation of prions on environmental surfaces and no sterilization processes cleared by the FDA for sterilization of reusable surgical instruments.

To minimize the possibility of use of neurosurgical instruments that have been potentially contaminated during procedures performed on patients in whom CJD is later diagnosed, health care facilities should consider using the sterilization guidelines outlined above for surgical instruments used during brain biopsy done on patients in whom a specific lesion has not been demonstrated (e.g., by magnetic resonance imaging or computerized tomography scans). Alternatively, neurosurgical instruments used in such patients could be disposable or instruments quarantined until the pathology of the brain biopsy is reviewed and CJD excluded. If disposable instruments are used they should be of the same quality as reusable devices.

Over the past ten years many researchers have searched for a method that inactivates prions on medical/surgical instruments yet can be applied to all instrument reprocessing so special prion reprocessing would not be necessary. When this goal is achieved, the need for special prion reprocessing may be eliminated. Until that time, these guidelines should be followed.

Effective capacity for Viral Haemhorragic Fever: what is cost effective

O43

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Despite hopes to the contrary, infectious diseases continue to claim the attention of public health authorities. In recent years, several factors, including changes in the environment, increased movements of goods and persons, and other phenomena concerning vectors and hosts, seem to promote and accelerate changes in the presentation of old infectious diseases and the development of new ones. Some emerging and re-emerging diseases represent a real challenge because of their epidemic potential: these Highly Infectious Diseases (HIDs, e.g. Viral Hemorrhagic Fevers and SARS) are transmissible from person to person, are life-threatening, present a serious hazard in the health-care setting and the community, and requires specific control measures.

In the preparedness plans for the control of HIDs, a main role is played by bio-containment clinical facilities: indeed, High-Level Isolation Units (HLIUs) for referral of HIDs are very important, since HIDs, for the adequate protection of health-care workers, other patients, and the whole community, require levels of

infection control and clinical expertise that cannot easily be provided in common hospital settings.

HLIUs are health-care facilities specifically designed to provide safe, secure, high-quality, and appropriate care, with optimal infection containment and infection prevention and control procedures, for a single patient or a small number of patients who have, or who may have, a HIDs. These facilities, according to a survey conducted by EuroNHID project in 2008-2010, are present in most European countries, and are usually equipped with dedicated entrance/exit pathways, and one or more single rooms with anteroom, negative pressure, HEPA filtration of exhausted air, doors and windows sealed. Ideally, these units should have direct access to an autoclave and to a BSL 3/4 area.

These units are clearly expensive, both for their construction and for the maintenance, and an exact assessment of their cost-effectiveness is difficult. For this reason, most of experts agree about the need for a day-to-day use - for example, for isolating patients with multi-drug-resistant tuberculosis or other patients requiring isolation. In addition, another possible use is represented by the use of these units as sites for specifically designed simulations, in order to train people in how to manage HIDs. In such ways the HLIUs could have dual functionality, and all the specific procedures could be continually exercised.

O44 Guidelines: how to modify risk factors for healthcare-associated infections (HAIs)

William A. Rutala

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HAIs are the most common complication affecting hospitalized patients. Between 5 to 10% of patients admitted to acute care hospitals acquire one or more infections (e.g., pneumonia, bacteremia, surgical site infection, urinary tract infection), and the risks have steadily increased during recent decades. These adverse events affect approximately 2 million patients each year in the United States, result in some 99,000 deaths, and add an estimated $4.5 to $5.7 billion per year to the cost of patient care. Infection control is therefore a critical part of patient safety as HAIs are the fifth leading cause of death in the United States. This presentation will examine national guidelines that discuss reducing HAIs (Centers for Disease Control and Prevention as well as The Society of Healthcare Epidemiology of America) and identify strategies for reducing risk factors for HAIs. These strategies include: a bundle for central line-associated bloodstream infections (hand hygiene, maximal barrier precautions, chlorhexidine skin antisepsis, optimal catheter care site selection, and daily review for line necessity); a ventilator-associated pneumonia bundle (elevation of the head of the bed to between 30º-45º, daily sedation vacation, peptic ulcer disease prophylaxis, and deep venous thrombosis); a bundle for urinary tract infection (avoid unnecessary catheters, insert urinary catheters using aseptic technique, maintain urinary catheters based on recommended guidelines, review urinary catheter necessity daily and remove promptly when not needed) and surgical site infection prevention measures (chlorhexidine-alcohol for surgical site antisepsis). Additionally, this presentation will also examine the challenges in the prevention and management of healthcare-associated infections. These include: the growing frequency of antimicrobial-resistant pathogens; the lack of compliance with infection prevention measures (e.g., hand hygiene, endoscopes); limited infection prevention resources; implementation of infection prevention bundles demonstrated to reduce HAIs; public reporting of HAIs; Centers for Medicaid and Medicare Services non-reimbursement for HAIs; health insurance reimbursement tied to quality goals; state and federal laws legislating care issues (e.g., influenza immunization for staff, MRSA screening of patients and staff); and a greater emphasis on infection prevention by accreditation groups such as The Joint Commission. In addition, there is the changing population of hospital patients (e.g., increased severity of illness; increased numbers of immunocompromised patients; shorter duration of hospitalization; more and larger intensive care units; and larger step-down units) and the need to implement new guidelines.

With improvements in medical devices (e.g., antimicrobial catheters, antimicrobial patches), standardization in key care processes using checklists or bundles, and a greater understanding of the science of infection prevention, safe healthcare in the 21st century will become a reality.

O45 Motion: 100% hand hygiene compliance is achievable and necessary

Pro: Cheryl Etches

Royal Wolverhampton Hospitals NHS Trust, UK

Con: Stephen Barrett

Southend University Hospital, Westcliff-on-Sea, UK

It is widely accepted that hand hygiene is one of the key interventions required for a successful infection prevention and control programme. As a result an increased emphasis on better hand hygiene in healthcare facilities has been evident over the past decade, spurred by a global WHO campaign. Several countries and/or hospitals have adopted a zero tolerance policy to hand hygiene transgressions with healthcare workers even liable to disciplinary action or dismissal for persistent non-compliance. Is this an approach which should be more widely adopted? Is 100% hand hygiene the panacea to solving our infection control problems? Is there evidence that such an approach improves healthcare infection incidence? Above all, are goals of 100% hand hygiene compliance realistic? The two speakers will debate these and other arguments in favour and against the subject.

O46 Professional development and competency in infection prevention

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[2]Department of Health, London, UK

[3]The Royal Marsden NHS Foundation Trust, London, UK

This interactive workshop will provide participants with:

- Overview of competency and competence frameworks that exist,
- An insight into national and governmental perspectives on the importance of competency frameworks for infection prevention,
- Examples and insights into use of competency frameworks for the development of academic courses and other curriculum,
- Practical examples of use of a competency framework for team and personal professional development,
- Facilitated time to review and begin to use the Infection Prevention Society competency framework for personal development.

How to read and critically assess an infection control paper O47

Nizam Damani

Craigavon Area Hospital, Portadown, Northern Ireland, UK

This workshop will focus on correct evaluation and critical assessment of infection control publications. Participants will be given a paper on infection control and have 20 minutes (in groups) to read it, assess its contents and provide their comments. This will be followed by a presentation on how to read medical papers. Handout and clear guidance will be provided.

Ventilation- challenges in varied geographical and economical climes O48

Shaheen Mehtar

Stellenbosch University, Cape Town, South Africa

Ventilation, controlled or natural, is an essential part of healthcare facility design. In countries with severe or extreme climatic conditions, controlled ventilation is essential to ensure that healthcare facilities can function throughout the year. The cost of running and maintaining a controlled environment is usually high

and requires skilled engineering and maintenance staff to ensure consistency and to keep up with the demand. However, in moderate climes or low to middle income countries, the effective use of natural ventilation not only reduces the cost of building but also of maintenance- a skill which is often lacking.

New buildings should be designed with clear indications of how best to use both controlled or natural ventilation. Specific indications for ventilation should be clearly defined such as specialised areas (operating theatres, isolation facilities) rather than extensively throughout the facility. In LMI countries, natural ventilation could be applied effectively in most situations with supplemented assistance in specific areas. The appropriate use of ventilation will be dictated by the disease profile of the region and predictions of healthcare associated and communicable disease burden in the future.

O49 Safe needles and occupational health

Ian Lindsley

European Biosafety Network, London, UK

Update on the background, objectives and activities of the European Biosafety Network and the genesis and key features of the European Directive on Sharps Injuries and the current state of play with regard to technical implementation and legal transposition of the directive. The practical steps which occupational health and infection control professionals will need to take to comply with the provisions of the new directive which comes into force in 2013.

O50 Applying a hand hygiene improvement model

Benedetta Allegranzi[1], Claire Kilpatrick[2]

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To translate recommendations on hand hygiene best practices in healthcare into practice and facilitate and support their implementation, the World Health Organization developed the Multimodal Hand Hygiene Improvement Strategy, accompanied by an Implementation Toolkit including 32 tools. Their testing and subsequent use in a broad range of healthcare settings showed significant impact on hand hygiene infrastructure, knowledge, practices and other indicators. An additional tool for assessment of the level of progress of healthcare facilities in hand hygiene implementation was recently developed and validated. This tool, called WHO Hand Hygiene Self-Assessment Framework, allows to obtain a situation analysis of hand hygiene promotion and practices within an individual healthcare facility, according to a set of indicators.

The Workshop entitled "Applying a hand hygiene improvement model" will allow participants to:

- understand the key elements of the WHO Multimodal Hand Hygiene Improvement Strategy through examples of real-life implementation in a range of healthcare facilities worldwide
- learn how to complete the WHO Hand Hygiene Self-Assessment Framework
- understand how to interpret the results of this self-assessment in order to identify achievements as well as areas for further improvement.

Navigating the maze of antibiotic stewardship in hospitals O51

Nizam Damani

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It has been estimated that about 30 % of all hospitalised inpatients at any given time receive antibiotics and between 30-50% of prescribing is considered inappropriate. Implementations of effective antimicrobial stewardship programmes in healthcare setting are crucial. In addition to the cost saving, they are essential not only to reduce antimicrobial resistance, but also side effects associated with

antibiotic prescribing. Effective implementation of antimicrobial stewardship programmes has also reduced incidence of *C. difficile* associated diarrhoea. For successful implementation, it is essential that a collaborative approach should be adopted and healthcare facilities should develop guidelines based on local antibiotic resistance patterns.

The strategy which has been successfully adapted includes (1) Development of hospital guidelines (2) Restricted reporting by the microbiology laboratory (3) Formulary restriction & preauthorization (4) Prospective audit with intervention & feedback of data to clinicians and, (5) antibiotic wards rounds by a multi-disciplinary team which includes clinicians, antibiotic pharmacist and a microbiologist.

The aim of this interactive workshop is to discuss the issues and share experience on how to implement antimicrobial stewardship successfully in your hospital.

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O52 Infection prevention in the home and in everyday life settings – inaugural meeting

Sally Bloomfield

London School of Hygiene and Tropical Medicine, UK

IFIC has accepted an application from the International Scientific Forum on Home Hygiene (IFH) to form a new Special Interest Group on "Infection prevention in home and everyday life settings". This reflects a growing awareness that preventing infection in healthcare settings cannot be properly addressed without also addressing hygiene and infection prevention in the community i.e without closing the circle. The mission of the group is to provide IFIC members with resources through which they can obtain information and exchange knowledge and views on infection prevention in home and everyday life settings. So, come and register your interest and give us your views, including what activities you would like the SIG to undertake in support of your work as an infection control specialist.

FRIDAY

O53 Clinical waste management – after collection… the real challenge

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The management of heatlhcare waste in limited resource settings continues to be a challange. A lack of adequate supplies appears to be a recurring theme. Healthcare workers have been creative in their attempts to address these issues at the point of generation. However, the system seems to fall apart after collection of the waste. Typically leaving the heatlhcare facility by the backdoor, these waste streams see a number of treatment and/or disposal methods. There are a multitude of challenges - geography/ available space/ proximity to other dwellings/construction/operation. and most important: sustainability. A number of techniques are being utilized in several countries to address these challenges. This presentation will discuss these practices in more detail and how to implement them.

O54 The WHO glove use pyramid: knowledge gaps among Belgian nurses

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Introduction

Appropriate glove use is a cornerstone in effective hand hygiene programs. Nurses' knowledge regarding appropriate glove use has only rarely been studied in Belgium.

Methods

We developed a questionnaire based on the WHO glove use pyramid. The pyramid was used as campaign material for the most recent national hand hygiene campaign. The final questionnaire contained 36 glove use indications with four response alternatives: "no gloves indicated", "non-sterile gloves indicated", "sterile gloves indicated" and "I do not know". Demographic data such as sex, age, years of nursing experience and type of ward where respondents worked, were also collected. The questionnaire was completed during class by nurses following a Bachelor-after-Bachelor's course in the spring of 2009.

Results

The questionnaire was filled out by exactly 100 nurses (response 100%). Maximum score was 94%, minimum 22%. The median total knowledge score (scoreTOT) was 81% (IQR 75-86). Some of the most striking gaps in knowledge were; - 18% do not wear gloves when performing a venal puncture - 37% wear gloves when providing basic hygienic care and 18% wear no gloves when performing genital care (as a part of hygienic care) - 29% will manipulate vascular catheters without gloves, 24% use sterile gloves - 58% prepare cytostatics with non-sterile gloves The median scoreTOT for all acute care wards was 81% (IQR 78-85), respondents providing chronic or extramural care scored 75% (IQR 71-83). This difference was statistically significant (Mann whitney U test $P<0.001$).

Conclusion

We identified several knowledge gaps concerning appropriate glove use in Belgian healthcare workers. Nurses working in acute care wards scored significantly higher compared to nurses working in other wards.

Nurses' compliance with Standard Precautions: a systematic literature review O55

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Introduction

Standard Precautions is a set of guidelines aiming to protect health care professionals from being occupationally exposed to pathogens. Literature supports that nurses are often victims of such exposure (e.g. due to needlestick injuries or exposure to air-born pathogens etc). Such exposure may lead to the acquisition of a disease, sometimes lethal. It can be argued that this exposure is due to poor compliance nurses show in following Standard Precautions.

Aim

To investigate the level of nurses' compliance with Standard Precautions.

Method

Systematic literature review using MEDLINE, CINAHL and EMBASE for retrieving relevant articles, performed between September and October 2010. No publishing time limit was set. Key words used were: nurse, health care professionals, occupational exposure, Standard, Universal, precautions, compliance, behaviour, adherence, pathogens. The same search strategy was used for the three databases, and the guidelines of the Centre for Reviews and Dissemination (CRD) for undertaking systematic reviews were followed. A previously tested and published checklist was used for appraising the quality status of the final articles. A number of 20 articles were finally used.

Results

There is considerable evidence which confirms that nurses' compliance with Standard Precautions is suboptimal, a fact that leaves them unprotected against pathogens.

Conclusion

Efforts should focus on persuading nurses to comply with Standard Precautions, in order to eliminate occupational exposure to pathogens. Further studies should focus on the factors that influence nurses' compliance with Standard Precautions.

O56 Infection prevention as an entry point for improving quality and safety – lessons from WHO's African Partnerships for Patient Safety

Julie Storr

WHO African Partnerships for Patient Safety, UK

Infection prevention and control is a central part of the patient safety and quality improvement agenda. WHO African Partnerships for Patient Safety is targeting action at the hospital level to improve 12 interrelated patient safety improvement areas. One of these (APPS Action Area 5) addresses health care-associated infection (HAI) with hand hygiene at the centre. Hand hygiene improvement provides a tangible entry point for the prevention of HAI, which in turn contributes to enhanced patient safety. Patient safety is integral to high quality health systems which ultimately improves population health.

Because the model is predicated on the development of strong, sustainable and mutually beneficial partnerships there is an increasing body of learning emerging from the programme, particularly as it expands to 11 countries of the WHO Region of Africa. The session will provide the audience with the chance to learn more about the emerging benefits of partnership working from an infection prevention perspective and what this can offer infection prevention and control practitioners everywhere. It will also familiarise people with the APPS improvement resources and invite delegates to consider how they might support the programme including establishing there own partnerships across continents.

Hand hygiene in the Netherlands: who is responsible? O57

Gertie van Knippenberg-Gordebeke

KNIP Consultancy Infection Prevention, Venlo-Boekend, The Netherlands

Handhygiene in Dutch hospitals was controlled by the head nurses. Since 1967 the Health council advises handhygiene in the Netherlands to prevent nosocomial infections, (updated 1990). In contrast with the advice the practice was not any longer controlled because leaders promoted: it was every healthcare worker's (HCW's) own responsibility. Handhygiene is always discussed at annual conferences of the Dutch Association of infection prevention in healthcare (VHIG), and consultant's infection prevention introduced handalcohol in hospitals 15 years ago. Alas at conferences for HCW's including physicians, handhygiene is seldom mentioned. Holland was one of the 1st countries who signed the WHO pledge for handhygiene, unfortunately nobody felt responsible to take any action. In 2008 a survey for handhygiene compliance was conducted by the Erasmus university of which the results showed a compliance < 20%. 4 Volunteers from the VHIG and the Dutch Society for Medical Microbiology (NVMM) started in 2009 a working party: ''Take 5''. There goal is a national campaign handhygiene for all healthcare settings, supported by the ministry of health. The inspectorate of health supported the idea from the beginning and placed the theme on the agenda of the Patientsafety conference 2010. This year VHIG and NVMM recognized ''Take 5'' officially and decided to use the WHO's self-assessment as a tool to progress hand

hygiene promotion in the Netherlands. Members ''Take 5'' will anonymously evaluate the total national data. These results will be presented to the ministry of health with hopefully action as result

O58 National Guard Initiative to improve hand hygiene

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The leadership of the National Guard Health Affairs at King Abdulaziz Medical City in Riyadh, has made compliance with Hand Hygiene (HH) a priority in all 4 hospitals and primary health care clinics throughout the Kingdom. Further, being a WHO Collaborating Center for infection control and headquarters for the GCC for infection control, it has prioritized HH to be adopted by all healthcare facilities in the region. We became aware of the global initiative announced after 2004 when the ''World Alliance for Patient Safety'' endorsed the first patient safety goal ''First do no Harm''. In 2005 we initiated our campaign, ''Clean Start is a Good Start'' accompanied by our initial attempts for system change with alcohol hand rub and launching a wide spectrum educational campaign. In 2007 the WHO announced three Global Patient Safety Challenges; the first of which was ''Clean Care is Safer Care''. Our organization had joined the global initiative and presented the region as one of first 7 hospitals globally and one of 2 hospitals from Kingdom of Saudi Arabia to partner the WHO on Clean Care is Safer Care. National Guard Health Affairs had further supported this global initiative through participating as pilot site for the assessment of many WHO HH tools, translation of HH documents and motivation of neighboring countries to join the initiative. In this presentation I will highlight the activities taken by our organization to support the Global Initiative for improving Hand Hygiene in the attempt to provide a safer environment for our patients.

O59 Reforming the activity of Special Interest Group of hand hygiene

Nagwa Khamis

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The Special Interest Group of Hand Hygiene (SIG-HH) started with 38 members after IFIC Budapest congress, 2007. Their number was much pronounced according to the IFIC Chile conference to be 106 members, 2008. They consist of microbiologists, epidemiologists, infection prevention nurses and consultants. By IFIC Vilnius 2009, the members became 115 from around the world. On starting the group activity, we were guided by WHO tools aiming at promoting hand hygiene among active participants of SIG-HH, using a reference tool, in a way to embed this measure, in steps.

We conducted three studies over 2008, 2009 and 2010.

1 2008: a survey using the WHO “First Level Evaluation Survey” form.
2 2009: We followed by preparing a small survey, inspired from the 5 moments of the WHO.
3 2010: We prepared a survey concentrating upon two moments “moment 1 and 4” which, unfortunately, was not achieved as planned.

A complete makeover was done recently to continue the SIG-HH activity. We will be focusing upon the different experiences of the group members and we will show them in our presentation. Three cases will be illustrated from Chile, Pakistan and Egypt, showing efforts to improve hand hygiene in hospitals. Experts from Netherlands, Tunisia, Kingdom of Saudi Arabia and Egypt will add anther four local national studies, in the business session.

O60 An outline of Norwegian legislation on infection prevention and control – applications to developing countries

Geir Stangeland

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Norwegian legislation provides norms and regulations for infection control in all areas of health care. This forms the basis for sound practice on infection control issues.
From this we wish to show how:

- Very much can be done with small means – economically and personnel-wise
- Health care personnel need more education on simple matters concerning infection control and antibiotic use.
- It is evident that there is a great need for guidelines and regulations
- Legislation compels health care providers to comply with minimal needs and ensuring infection control
- Can you learn from Norway?

O61 Evidence-based protocols in infection control – a challenge for infection control nurses?

Anne Dalheim

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Evidence-based practice requires that professional decisions are based on systematically gathered evidence drawn from research, clinical experience and on the patients' desires and needs in a specific situation. The national authorities of Norway have decided that the health service is to be evidencebased. The benefit is that an evidence-based health service will be better able to meet the challenges concerning patient safety improvement and the quality of services. The Norwegian Electronic Health Library provides free access for health professionals to guidelines, systematic reviews and major scientific journals. Infection control nurses in Norwegian hospitals have delegated responsibility for ensuring that the infection control program is in accordance to statutory requirements and is based on best available knowledge. Despite the available tools, nurses do not know how these can be used properly.

O62 Antibiotic policy and handling of patients with resistant bacteria in a country with low prevalence of antibiotic resistance

Egil Lingaas

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The prevalence of antibiotic resistance among clinically significant bacteria in Norway is among the lowest in the world. There are several factors potentially contributing to the favourable situation. Overall use of antimicrobial agents per capita has always been low compared to most other countries. Also, the proportion of broad spectrum drugs prescribed is smaller. Historically, this was due to the influence of a few strong opinion leaders and consensus in the medical community. Up to the middle of the 1990ies, the Norwegian Medicines Agency practiced a restrictive policy regarding licensing new antimicrobial agents. However, this policy had to be abandoned with the Agreement on the European Economic Area, which entered into force on 1 January 1994. The first national plan for hospital infection control was launched in 1992, also including policies for the prevention of antibiotic resistance. In 1996 many elements of this action plan were enforced by law, including the requirement for healthcare workers who had been working abroad to be screened for MRSA before starting work in Norwegian healthcare. In 2000 and 2004, the Government launched national plans for the prevention of antibiotic resistance and hospital acquired infections respectively. In 2007 these plans were merged into a new national strategy for the prevention of healthcare associated infections and antibiotic resistance for the period 2008 – 2012. As a result of these plans, a national reference centre for the use of antibiotics in primary health care was established in 2006 and a similar centre for hospitals in 2010.

O63 Re-use of single use devices

Walter Popp

University Hospital Essen, Germany

Some common basics are presented about reprocessing of multiple-use and single-use devices. Sometimes single-use devices seem to be multiple-use in reality and multiple-use devices should better be seen as single-use ones. Also automated reprocessing does not automatically mean better reprocessing, it depends on structures and well trained staff necessary. Therefore, if resources are scarce, reprocessing of single-use devices is possible. If single-use devices are reprocessed in low resource countries, a decision for each product should be made regarding a risk analysis, decision making, perhaps pilot tests, written procedure, documentation of decision making. The decision making should also include transport problems and a cost analysis. Some sort of validation should be aimed for, at least bioindicators. Reprocessing should be done preferably of instruments without holes and channels, e.g. ablation catheters.

O64 Cost-effectiveness of source isolation

Stephen Barrett

Southend University Hospital, Westcliff-on-Sea, UK

Abstract not available

O65 Infection control in developing countries – challenges and solutions

Pola Brenner

University of Valparaiso, Chile

There are 144 "Developing countries" (73% of total). Levels of development may vary widely within them and so Infection control programs. In some countries, risk of health care associated infections (HCAI) and antimicrobial resistance is likely to be several times higher. Common problems are insufficient resources and basic implementation, big expenses in ineffective and unsafe practices, no consciousness of authorities, lack of information and national regulations, difficult access to knowledge, no networks and insufficient training. Experiences of countries show similar problems. Exist a correlation within processes and results and HCAI problems are more related to education, consciousness and attitudes than resources. People are not conscious of the risks and don't press for having preventive policies. Challenges are create consciousness, improve training, encourage national approach, count with guidelines in all languages, better surveillance, improve evidence based practices, avoid unsafe and ineffective practices and evaluate compliance. Effective agents of change are Networks and Infection Control Societies who have demonstrated to be one of the most important sources of training and support

O66 Estimates of the global endemic burden of healthcare-associate: how should our perspective change?

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Background

Healthcare-associated infection (HAI) is the most frequent consequence of unsafe patient care worldwide. However, the global burden remains unknown and data are limited or non existent in many countries, in particular in low-/middle-income countries (LMIC).

Methods

Systematic literature reviews on endemic HAI epidemiology and impact in both high-income (HIC) and LMIC between 1995 and 2010 were conducted with the objective to capture available information and show it in an aggregated way. A broad range of electronic databases were searched (Medline, Cochrane, the WHO regional databases, Embase) with no language restriction. Based on the selected studies, descriptive statistics and data pooling with meta-analytical techniques were performed.

Surveillance network, study period, country	Number of ICUs	CR-BSI*	CR-UTI*	VAP*
Adult ICUs				
INICC, 2002–2007, 18 developing countries	60	8.9	6.6	19.8
Argentina, 1998-2004 (current systematic review)	15	25.8	18.5	49.5
Brazil, 2003-2005 (current systematic review)	6	/	/	22.7
India, 2004-2007 (current systematic review)	13	5.6	6.3	20.9
Turkey, 1999-2005 (current systematic review)	14	13.6	11.0	21.2
Current systematic review (1995-2008)	244	12.2	10.6	25.1

* Overall (pooled mean) infection episodes/1000 device-days

Results

Estimates were available on the number of patients affected by HAI, and attributable deaths and costs in Europe and in the United States, indicating a huge burden. Only very scanty information was available from LMIC, in particular at the national level, and reported HAI rates were higher than in HIC. Pooled HAI prevalence in mixed patient populations was 7.6% in HIC and 10.1% in LMIC, but the latter was significantly higher in high- than in low-quality studies (15.5% vs 8.5%, respectively). Surgical site infection was found to be the most surveyed and most frequent type of infection in LMIC with incidence rates ranging from 1.2 to 23.6 per 100 surgical procedures. Pooled cumulative incidence density was 17.0 and 42.7 episodes per 1000 patient-days in adult high-risk patients in HIC and LMIC, respectively. Among adult ICU patients in HIC, pooled cumulative incidence densities of catheter-related bloodstream infections, urinary catheter-related urinary tract infections, and ventilator-associated pneumonia were 3.5 per 1000 central line (CL)-days, 4.1 per 1000 urinary catheter-days, and 7.9 per 1000 ventilator-days, respectively; in LMIC; they were 12.2 per 1000 CL-days, 8.8 per 1000 urinary catheter-days, and 23.9 per 1000 ventilator days, respectively. Quality was low in 53.6% of studies in LMIC.

Conclusions

Although HAI global estimates are not yet available, by integrating data from published studies, there is clear evidence that hundreds of millions of patients are affected every year worldwide, with the burden of disease at least 2-3 times higher in LMIC. These findings and the related scattered global picture provide strong evidence for the need to improve surveillance and infection control practices.

The impact of the WHO hand hygiene improvement strategy in a network of 41 Italian intensive care units

O67

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To evaluate the impact of the WHO multimodal hand-hygiene intervention, a before-after study was conducted in 41 Italian Intensive Care Units (ICU's). The impact on structure wards and organization (34 ICUs), hand hygiene (HH) compliance (41 ICUs), knowledge (28 ICUs) and perceptions (37 ICUs), as well as on infection rates (a sub-sample of 25 ICUs, participating to the Italian National Surveillance Network program GiViTI) were evaluated. The availability of handrub dispensers, and of posters

near the sink and at the point of care significantly improved after the intervention, as well as carrying out periodical audits on HH compliance and education on HH. HH opportunities were 9977 at baseline and 9363 at follow-up; compliance increased from 55.2% to 68.6%, respectively (p<.001). Improvement was observed for all HH indications and across all main professional categories.Overall, the ORs of HH compliance after the intervention was 1.91 (95% CI 1.69-2.16), when adjusted for known determinants of compliance (opportunities/hour, professional category, HH indication). HH knowledge significantly improved after the intervention (the percent of global number of corrected answers was 0.54 before and 0.75 after, p <0.001), as well as the perception of the efficacy of specific actions to increase permanently HH in the institution and of the importance attached by colleagues and the patient to optimal HH. Significant improvements of ABHR availability, HH practices and knowledge among HCWs in the ICUs were observed, thus proving the feasibility and effectiveness of the WHO HH improvement strategy on a large scale and in high workload conditions.

O68 Raising the bar and keeping the profile of hand hygiene alive at all levels, year on year; results from the first years of a global hand hygiene campaign

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Running a campaign is challenging, yet 'what gets talked about gets done'. Since launch in 2009, WHO SAVE LIVES: Clean Your Hands (SL:CYHs) has aimed to engage all healthcare facilities (HCFs). The strategy is multimodal and reflects the approach used by other social marketing initiatives. Evaluation was performed, to inform future strategies and provide lessons learned. Electronic communications were primarily used to promote engagement. In 2010, two new tools were issued in support of the campaign: the Moment 1 tool and Hand Hygiene Self-Assessment Framework (HHSAF). Web site access and tool downloads were analysed using WHO web statistics with Urchin software (Google Inc.). Reviews of SL:CYHs registrations and local activities submitted to WHO between 2009-2011 took place.

From April-June 2010 the Moment 1 tool was downloaded 7 693 times. The HHSAF was downloaded 27 526 times, between 5 May 2010 to end Feb 2011. The rate of SL:CYHs registrations evolved; those countries still with no registrations feature in all regions and appear to be those which are smaller, with less internet penetration. Local activities vary; education and promotional materials are most popular.

Despite reflecting two different periods, other than the 'how to handwash' poster, the HHSAF is the most popular download. The Moment 1 global survey in 2010 improved WHO's understanding of HCFs' move from 'commitment to action'; issue of the HHSAF also facilitated engagement of HCFs. An apparent relationship between calls for action and local activities appears to exist, as well as between the issue of tools and commitment.

O69 Multi-drug resistant healthcare-associated infections arising in the community

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Healthcare-associated bacterial infections (HCAIs) are characteristically multidrug resistant (MDR). Antibiotic (antimicrobial) usage is concentrated in hospitals and tends to select for antibiotic resistance; on the other hand, MDR pathogens are more likely to survive and spread in the hospital environment. HCAIs have usually been caused by opportunistic pathogens that are inherently multi-resistant but poorly virulent. For these reasons, HCAIs have tended to occur in compromised, hopsitalised patients with a history of prior antibiotic therapy, and outbreaks have usually been caused by cross-infection with single strains.

This picture has now changed dramatically, with the emergence of community infections caused by diverse strains of more virulent MDR pathogens in patients with no or limited previous healthcare contact. Asymptomatic colonisation with these MDR organisms may spread widely in the community, locally, nationally and internationally. Infected patients may then be admitted to hospital or other healthcare facilities and cause nosocomial spread to other patients. This results in multiple strain outbreaks of HCAIs with virulent MDR pathogens affecting less compromised patients and sometimes staff.

Examples are glycopetide-resistant enterococci, community-associated MRSA and MDR coliforms, including *E. coli*. Traditional methods of infection prevention and control are not designed to deal with this new epidemiology and new approaches in the hospital, community and hospital-community interface are needed. There is also an urgent international need for prudent antibiotic usage to reduce the antibiotic pressure that encourages the emergence of multi-drug resistance.

The year in infection control

O70

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A year in Infection Prevention and Control does not stand still. Old foes re-emerge in different guises, reminding us of the need to remain vigilant. Infection control preventionists and practitioners all over the world need to remain alert to the continuous threats of multiresistant organisms, pandemic influenza, and the emergence of new threats presenting as heath care or community based outbreaks . It is through international networking, mutual support and enhanced communications that some of these threats can be addressed.

Poster Presentations

P1

Antimicrobial efficacy of 2% chlorhexidine gluconate alone and in combination with 70% 2-propanol against nosocomial methicillin-resistant *Staphylococcus aureus* isolates

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Nosocomial infections are caused by different range of pathogens. These are more resistant to common antimicrobial agents. Infections due to methicillin-resistant *Staphylococcus aureus* (MRSA) have been associated with excess morbidity, mortality and with increased costs. The emergence of multidrug-resistant organisms underscores the importance of using antiseptic agents as a strategy for infection prevention. The Centers for Disease Control and Prevention recommends that 2% chlorhexidine-based preparations be used to cleanse the site of insertion of vascular catheters. In order to reduce the risk of microbial colonization and subsequent sepsis of vascular catheters, the skin insertion site should be disinfected for 30 s with an antimicrobial solution. The aim of this study was to compare the efficacy of 2% (w/v) chlorhexidine gluconate (2% CHG) with 2% CHG in 70% (v/v) 2-propanol (70% 2-P) against 15 MRSA isolates, by the quantitative suspension test, at contact time of 30 s. In this study MRSA were randomly selected among nosocomial isolates, obtained from clinical specimens sent to Ankara University, School of Medicine, Ibn-i Sina Hospital, Central Microbiology Laboratory. All the isolates were susceptible to 2% CHG in 70% 2-P. However, 3 isolates were resistant to 2% CHG. Our study has demonstrated that 2% CHG in 70% 2-P provided a significantly better antimicrobial activity than 2% CHG at contact time of 30 s. These results suggest that enhanced skin antisepsis may be achieved with 2% CHG in 70% 2-P compared with the 2% CHG.

P2

Antimicrobial efficacy of 10% povidone iodine alone and in combination with 70% 2-propanol against nosocomial *Enterococcus faecalis* isolates

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Alcohol provides rapid bactericidal activity via protein denaturation, dehydration, interference with metabolism and cell wall/cell membrane disruption, whereas povidone iodine provides a more prolonged bactericidal effect via attacking groups within nucleotides, fatty acids and thiol groups within proteins. In order to reduce the risk of microbial colonization and subsequent sepsis of vascular catheters, the skin insertion site should be disinfected for 30 s with an antimicrobial solution. The aim of this study was to compare the efficacy of 10% (w/v) povidone iodine (10% PVP-I) with 10% PVP-I in 70% (v/v) 2-propanol (70% 2-P) against 15 *Enterococcus faecalis* isolates, by the quantitative suspension test, at contact time of 30 s. The *E. faecalis* included in the study were randomly selected among nosocomial isolates, obtained from blood samples sent to Ankara University, School of Medicine, Ibn-i Sina Hospital, Central Microbiology Laboratory. All the isolates used in our study were susceptible to 10% PVP-I in 70% 2-P. However, 3 isolates were resistant to 10% PVP-I. Our study has demonstrated that 10% PVP-I in 70% 2-P provided a significantly better antimicrobial activity

than 10% PVP-I at contact time of 30 s. As a result, the combination is more effective than 10% PVP-I alone.

P3 Molecular analysis of drug-resistant Mycobacterium tuberculosis clinical isolates from Poland

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Drug-resistant tuberculosis, and particularly multidrug-resistant tuberculosis (MDR-TB) and extensive drug resistant TB (XDR-TB) as an increasing health problem and a serious challenge to TB control programmes. Information about susceptibility patterns of *Mycobacterium tuberculosis* isolates against antituberculosis drugs is important aspect of tuberculosis control, and surveillance and analysis of local rates of TB drug resistance is helpful in the detection and monitoring of the extent of MDR and XDR strains, indicating the quality of TB control in the country.

In 1994, The World Health Organization (WHO) and the International Union Against Tuberculosis and Lung Disease (IUATLD) launched a global project on anti-tuberculosis drug resistance surveillance. From 1994 through 2007, the global project has collected data from areas representing almost 50 % of the world's TB cases. A survey found that multi-drug tuberculosis has become established worldwide. WHO estimated that 50 million people were infected with drug-resistant strains of *M. tuberculosis*.

The classification of drug resistance as primary or acquired is used as an indicator of the efficiency of national tuberculosis programmes and in the adjustment and development of these programmes. The rate of primary drug resistance is interpreted as an epidemiological indicator for long-term surveillance of the quality of tuberculosis treatment in the community. The rate of acquired drug resistance reflects the efficacy of management of individual patients Since 1999, WHO developed DOTS-Plus strategy which can help how to manage MDR-TB using second line drugs in low- and middle-income countries within DOTS strategy.

Poland joined the global project and in 1997 carried out its first simultaneous survey on primary and acquired drug resistance in tuberculosis patients exactly, according WHO/IUATLD recommendations and protocols. Until now 4 surveys have been performed.

Drug resistance in tuberculosis patients have been monitored in Poland for a long time. From the first report of primary resistance published in 1962 up to the last survey of 2005 decreasing frequency in rate of primary resistance can be observed . In period of recent 50 years the mean frequency of resistant was on the similar level with very low rate of RMP resistance to *M. tuberculosis*.

Materials and methods

A total of 48 clinical isolates of *M. tuberculosis* representing 48 non-related, adult patients with resistant pulmonary tuberculosis in central Poland (Mazovian Voivodeship) in 2004 were analysed by spoligotyping and IS*6110*-Mtb1/Mtb2 PCR .

Results

Among strains tested, 26 distinct spoligotypes were identified. Unique spoligotype patterns were observed in 19 (39.6%) isolates and the remaining 29 (60.4%) isolates were grouped within 7 clusters, made up of 2-8 isolates. When compared with an international database SpolDB4, 13 (27.1%) of the 19 unique profiles shared already described spoligotypes, whereas the rest 6 (12.5%) did not match any existing spoligotype and were defined as orphans. Interestingly, two members of the Beijing family were identified. Two clusters, comprising 2 and 4 isolates, respectively, were identical both with spoligotyping and IS*6110*-Mtb1/Mtb2 analysis.

Conclusions

A total of 12 isolates were clustered by spoligotyping in combination with IS*6110*-Mtb1/Mtb2 PCR.. Spoligotyping was shown to be useful as a pre-screening genotyping method to be followed by

another technique of greater discriminatory power, such as IS*6110*-Mtb1/Mtb2 PCR.

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P4 Reducing MDRO in your hospital: implementation of isolation precautions bundle that may be the recipe for success

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Background

Reducing healthcare associated Multidrug-Resistant Organisms infection (HAI-MDRO) requires an organized process. In early 2009, our HAI-MDRO rate was steadily increasing.

Objectives

To reduce HAI-MDRO by 50% through implementing the MDRO isolation bundle.

Methods

TBRI hospital is a 300 beds tertiary care hospital with annual 4,500 inpatient admissions &1500 surgeries. A surveillance study was done for MDRO (MRSA and ESBL) infection rates in two years; 2009 &2010. The MDRO isolation bundle was implemented during 2010 to be followed up & evaluated consequently. The key components of such bundle include:

Standard precautions

1. A special store was established to maintain resources availability.
2. Transmission-based precautions: Identify patients colonized with MRSA or ESBL & place them on contact isolation. For respiratory infections: Airborn isolation precautions with dedication of isolation room in each hospital department together with the use of the economically environmental containment unit to keep negative pressure environment
3. Microbiology follow up: The % MDRO-positive rate combined with HAI-MDRO infection rate are important measures together with adoption of antimicrobial stewardship.
4. Notification system: Design, publish & distribute simple signs & simple notification sheets. Conducted daily supervision of infection control team rounds for surveillance of MDRO isolation bundle compliance.
5. A comprehensive education program for nursing & medical staffs besides visitors.
6. The team conducted a cost-benefit analysis to help in evaluating the bundle implementation economically.

Results

The overall infection rate was 5.7% in 2009 to be 2.35% in 2010. MRSA infection rate could be lowered from 0.1% to 0.04% of total patient admission & from 8.7% to 0.77% of total isolates in first and second years respectively. ESBL infection rate could be lowered from 0.94% to 0.65% of total patient admission and from 24.7% to 13.7% of total isolates in first and second years respectively. The compliance rate increased from 54% in 2009 to 70% in 2010. Hand hygiene compliance increased from 55% in 2009 to 75% in 2010.

Conclusion

By the end of 2010, we reached our goal of reducing HAI-MDRO by nearly 50%. Increased isolation has a profound organizational impact that is easily overlooked. The MDRO isolation bundle was effective in controlling MDRO in our hospital and may be the recipe for success in your hospital.

P5

Antimicrobial consumption in four different adult intensive care units in a Saudi tertiary care hospital

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Background

Surveillance of antimicrobial consumption is a necessary step to develop and monitor policies to limit antimicrobial overuse/misuse and to decrease the risk of bacterial resistance. In Saudi Arabia, such surveillance data are lacking.

Methods

We conducted a prospective surveillance study in four different adult intensive care units (ICUs) at King Abdulaziz Medical City, from May through December 2010. We estimated the consumption of ten commonly prescribed antimicrobials from five classes (aminoglycosides, carbapenems, cephalosporins, extended-spectrum penicillin, and fluoroquinolones). The consumption was estimated as Defined Daily Dose (DDD) per 100 bed-days/admission.

Results

Considering all 10 antimicrobials, a total 6876 DDDs were consumed in four ICUs during 8 months duration. The consumption per 100 bed-days and 100 admissions was highest for meropenem (33.2, 335.0), followed by piperacillin-tazobactam (16.0, 161.1), ciprofloxacin (6.7, 67.1), moxifloxacin (3.8, 38.6), imipenem (1.8, 18.1), ceftazidime (1.3, 12.7), gentamicin (0.9, 9.2), cefipime (0.9, 8.8), amikacin (0.6, 5.8), and cefotaxime (0.3, 3.4). Overall antimicrobial consumption per 100 bed-days was highest in medical-surgical ICU (84.8) followed by neurological (75.7), burn (50.9) and cardiovascular (13.9) ICUs. Since burn ICU had the longest length of study, it had the highest consumption per admission. There was wide monthly variation (~60%) of overall antimicrobial consumption with a generally increasing trend of meropenem and piperacillin-tazobactam.

Conclusions

We are reporting high consumption of certain antimicrobials such as Meropenem and Piperacillin-tazobactam in a Saudi tertiary care hospital. Concurrent monitoring of antimicrobial resistance and identifying patient and physician characteristics associated with these antimicrobial consumption may help their legitimate use.

Hand cleaning: Mission impossible?

P6

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Hand hygiene is widely recognized as the single most important health care-associated infections control practice. Throughout the world, efforts to enforce this issue include education, application control, and surveillance. San Carlo Borromeo Hospital in Milan, Italy, a public 700 acute beds facility, has complied with WHO 'Clean Care is Safer Care' campaign since its release in 2005. An update of the hospital's hand hygiene protocol was widely distributed and application was checked randomly as part of the 'hygiene rounds'. Through strict collaboration with Microbiology, sentinel germ surveillance was improved and appropriate antibiotic prescription was supported. Educational visuals were attached in every bathroom, in all nursing points, in every patient's room. Constant monitoring of the protocol's application was performed by the infection control nursing team. When WHO's new work 'SAVE LIVES: Clean Your Hands' was released in 2009, San Carlo Borromeo Hospital was facing an increasing number of CD infections in addition to the first critical cases of multiresistant *Acinetobacter* and *Klebsiella*. Needing to intensify efforts, specific education sessions were organized in 9 services during the afternoon nursing shift switch, where a Chief Medical Officer and the Microbiologist reviewed critical issues regarding hand hygiene and glove use with meds, nurses and helping staff. Services represented each clinical department

(medical, surgical, mother-child, diagnostic) and also radiology technicians and rehab therapists. As positive enforcement, acknowledgements for efforts and compliance were published in the Hospital's newsletter, together with a creativity contest where all workers, students and volunteers are invited to submit drawings, comics, slogans to emphasize hand hygiene.

P7

E-learning in Standard precautions – a way to prevent healthcare associated infections

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Background

An early finding of a single infectious patients are important. However, one can not be complacent with the identification of individual vectors, and assume that other patients are "harmless". Many times infections are spread from patients with contagious diseases that we haven´t discovered yet. For this reason it is essential that at all healthcare staff always use a safe way to work, in Sweden called Standard precautions. E-learning is a method of using computers for education. E-learning methods takes advantage of new technologies to improve learning accessibility and efficiency.

Aim

To prevent healthcare associated infections by using an e-learning programme in Standard precautions for healthcare professionals.

Methods

An e-learning programme in Standard precautions have been produced by the Department of Infection Control, Stockholm, Sweden. The programme is freely available at www.vardhygien.nu and takes about 15 minutes to complete. It has a modern interface, with a combination of text, audio, still images, videos and animations. The programme is divided into sections and each section has a box; introduction, conditions, hand hygiene, gloves, protective clothing and splash protection, respiratoratory protection masks, training and a knowledge test. After completion of the knowledge test a personal diploma can bee printed out. Results: The e-learning programme has attracted considerable interest both nationally and internationally. The first five months, 15 000 people visited the education and they came from from 11 countries and 155 cities.

Conclusion

In efforts to prevent healthcare associated infections is the e-training in Standard precautions a powerful, fast and accessible education option.

Infection Control Program in a tertiary care cancer center in a developing country

P8

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Introduction

Health care associated infections (HCAI's) constitute an important public health problem in developing countries. In many hospitals, infection control procedures are limited due to lack of financial resources, poor infrastructure, over-crowding, inadequate hygiene, deficient laboratory services, poor management, insufficient technology and a shortage of trained staff.

Methods

Infection Control Program (ICP) began in Tata Memorial Hospital in 1988 with an outbreak of meningitis. Hospital Infection Control Committee (HICC) was formed in the same year. The areas of focus of HICC was to standardize the practices of sterilization and disinfection, asepsis and antisepsis, hand hygiene, standard precautions, operating room practices and environmental hygiene and sanitation. HICC also started surveillance for HCA infections. This was also achieved by reviewing hand washing procedures in ICU and Operating Room and introducing chlorhexidine based handwash and handrubs in the hospital. Infection awareness programs were designed and surgical attires were streamlined for the doctors. A proper biomedical waste management program was also designed. Policies for antibiotics, disinfectant

and antiseptic usage, housekeeping, CSSD and reuse of instruments were also planned. Hospital Safety manual was written.

Conclusion

HCAI's represent a threat to patient safety and quality healthcare. Through focusing on infection control, countries with limited resources can improve the quality of healthcare in the future.

P9

Catheter-related bacteriemia caused by agrobacterium radibacter in a hemodyalisis patient

Bitti Angela

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Agrobacterium is a group of phytopathogenetic organisms widely distribuited in soil now recognized as rare human pathogens affecting immunocompromised hosts. We report the case of a catheter related bacteriemia due to *Agrobacterium radiobacter* in a 83 years old diabetic patient with a tunneled cuffed hemodialysis catheter. During routine controls for dialysis session we found an increased rate of VES (92 mmhg) and PCR (2.1 mg/dL) while leucocytes were in the range of normality (6000/cellule; rate neutrophils/linfocytes 45-50%). There wasn't any clinical evidence of inflammation despite of haematochemical analysis results. Blood sample were taken to perform haemoculture for detection of aerobic and anaerobic germs. After 10 days of incubation all samples were negative. The patient got worst, with after hemodialysis fever and very tired, and underwent to further blood collections for haemocultures from the venous and arterial access catheters. The aerobic culture was positive and, after all the routine steps, we isolated *Rhizobium Radiobacter*. The isolation was also confirmed collecting blood for haemocolture from peripheral vessels. Subcultures on blood agar and chocolate agar shown colonies appared non-pigmented, convex, oxidase positive and covered by a viscous layer; germal production of a biofilm explains the high bacterial adherence to catheter walls and, therefore, its persistence in site. Lock therapy with gentamicine infusion and a sistemic treatment with ciprofloxacina (250mg x 2 per 7gg) had positive effect: negative haemocoltures, regular haematochemical parameters and preservation of catheter in loco.

P10

Hand hygiene in students of medical school during training activities: knowledge, behaviour and prevalence of bacterial contamination

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The aim of the study was to evaluate knowledge, attitude and on-field practices concerning hand hygiene of undergraduate students attending the university hospital of Modena. The prevalence of bacterial contamination of their hands at entry to ward and at exit was also evaluated. Swab samples were analysed for total bacteria count at 37°C, *Staphylococcus aureus*, *Pseudomonas aeruginosa* and enterococci. At the end of the morning activity, participant students filled a questionnaire on personal data, activities, opportunities, opinion and compliance of hand hygiene. Higher total counts were measured at entrance compared to exit in both medical and nursing students, but the last group exhibited a stronger reduction due to higher compliance with hand-hygiene practices. Alcohol gel was the preferred procedure, and showed also a higher efficacy in reducing hand contamination. Contacts with stethoscopes and case history were those associated with higher levels of total bacterial counts as no hand hygiene followed those activities. No pathogen was recovered with the exception of two samples colonised by *Staphylococcus aureus*. Knowledge on hand hygiene was in general good, but should be implemented for students becoming doctors.

P11 Audit of adherence to MRSA screening protocol

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Introduction and Aims

MRSA (Meticillin Resistant *Staphylococcus aureus*) is a major cause of morbidity and mortality. The authors undertook an audit in October 2008 assessing adherence to MRSA screening protocol in Mayday Healthcare NHS Trust on the Care of the Elderly wards. The audit was presented to the department and actions were implemented to improve practice. A re-audit was then performed in October 2009.

Method

Data was obtained in retrospect from patient notes and electronic records of all inpatients on the Elderly Care wards in Mayday Hospital during October 2008 and October 2009. 114 and 124 patients were included in the audit and re-audit respectively.

Results

The first standard assessed was: "All patients >65 years old admitted through A&E should be screened for MRSA colonisation on admission". Compliance with this standard was 46.4% in 2008, compared with 86.3% in 2009. The second standard assessed was: "All MRSA negative patients at risk of MRSA infection (invasive devices, open wounds, new-onset sepsis, critical care) should be re-screened for MRSA weekly". Compliance with this standard was 10.7% in 2008, compared with 47.4% in 2009.

Discussion and recommendations

There has been a marked improvement in the number of patients receiving an MRSA screen on admission. However, re-screening protocol of MRSA-negative patients remains poor. The authors recommend:

1. All nursing staff should be granted authorisation to complete the electronic MRSA screening forms
2. MRSA protocol should be clearly published on the wards
3. A MRSA screening checklist should be incorporated into the patient drug charts

Legionella control in Vicenza hospital P12

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To reduce the risk of Legionella, in the Vicenza hospital is present a monitoring system of water samples and we use a surveillance system based on laboratory data. The Vicenza hospital is composed of several connected buildings, each building has its own water system and these systems are checked regularly for presence of Legionella in hot water. The cultures are performed by a laboratory outside the hospital. In 2008 we saw a significant increase on one of the five buildings of the hospital. Since then, we installed a system with chlorine dioxide. Although this system of Legionella control, the values were still high. So we have performed a remediation of the water with phosphoric acid and peracetic acid, but after two weeks the values tended to increase. It was therefore formed a multidisciplinary working group involving all stakeholders. This allowed us to identify some of the water problems like closed valves. Increasing the values of chlorine dioxide to get 0.30 ppm in the circulation also decreased the values of Legionella. Collaboration of all stakeholders is essential to control Legionella.

An in-use evaluation of the Meiko bedpan washer disinfector P13

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Introduction

A review of measures to curtail *Clostridium difficile* identified the need to purchase new bedpan decontaminators (BPDs). The Meiko (Offenburg, Germany) BPD system was selected for a clinical trial based upon key design features that facilitated operator use.

Methods

Three clinical units were selected for installation of three trial BPDs. Audits for the presence of visible fecal soil on processed items were conducted by infection control practitioners over a three-month period. TOSI testing devices (Waldkraiburg, Germany) and Simicon (München, Germany) microbiological and cleaning test strips were run in triplicate on 30 selected items. Midway through the trial, a machine update was performed redirecting the spray nozzles.

Results

Prior to the machine update there was a 1.4% failure rate for plastic (7/494) and an 8.5% failure rate for metal items (25/295) [p<0.0001]. Post machine update, failure rates for plastic were 0.8% (2/263) and for metal were 4.9% (8/163) [p=0.02]. There was a statistically significant difference in failures for all plastic items (1.2%) compared to metal (7.2%) [p<0.0001], with an overall failure rate of 3.5% (42/1,215). Simicon biological indicators (n=30) were negative as were the cleaning strips (28/28). TOSI cleaning strips failed on 29% of occasions (8/28).

Conclusions

Under clinical use conditions the Meiko BPD performed well as confirmed by biological indicators. Metal items presented a greater challenge compared to plastic. TOSI cleaning strip indicators are designed to represent hinged instruments, are an inappropriate challenge for BPDs, and should not be used as a marker of cleaning in this setting.

P14 Aosta regional Hospital: "wide spectrum" surveillance in the surgical area. Experience and lessons learnt

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Aim of the study

1. To evaluate adherence to Hospital hygiene procedures and related behaviours in the surgical area
2. To survey surgical site infections (SSI) incidence inside a National study.
3. To give feedback and up-to-date rules and procedures.

Setting and methods

About 430 beds, tertiary care Hospital, 113 surgery beds, about 3700 surgical interventions in 2010, 5 operating rooms. The following behaviours were investigated, by means of home-made check lists:

1. Hand Hygiene by health care workers (HCW's), as for WHO schedules, before and after alcohol gel implementation
2. Preoperative antibiotic prophylaxis
3. Hygiene procedures and HCW behaviours in the operating theatre
4. Environment cleaning and microbiology assessment
5. Surgical site infection incidence (ongoing).

Apart of item 1, surveillance was completed over a short period : September to December 2010.

Main findings

Mean hand hygiene adherence before and after implementation was 32% and 42,8 %, respectively. The mean score of preoperative prophylaxis was 2,8 (range 1 to 5). Length of hand asepsis was amongst the main criticism observed in HCW, while mean environment cleaning score was 85,4%.

Conclusions

Our approach allowed a broad coverage of the surgical area, unexpensive and relatively easy to perform. Since our analysis a fine tuning of most behaviours in the given setting is available, leading to the "molecular" definition of single item to be improved and/or corrected. Next, the check lists method allows follow up of many indicators. Finally, the proposed approach consent in-depth discussion with HCW's, leading to a multifaceted improvement strategy.

P15 Infected Pressure Ulcers in Disabled Children: the microbiological assessment

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Introduction

During the last five years, more than four hundred children were wound-cared at Bambino Gesu' Children's Hospital. 35% of them had a neurological primary system dysfunction with a subsequent moderate to severe disability. In these patients, complex social/action and life-limiting conditions belongs to three main categories: Genetic diseases, Malformative surgical pathologies and Acquired brain injuries. The main goal in these patients is to avoid stage III and IV Pressure Ulcer (PUs) infections, using a safe and fast double assessment of the samples obtained from the clinically infected PUs.

Materials and Methods

148 pts affected by 245 PUs were collected. 40 of them were infected and submitted to COPAN eSwab®, a nylon flocked swab which maintains viability of aerobic/anaerobic bacteria. A "Zig-Zag" sampling technique is the preferred method because of a rapid collection and an absence of contamination. We used at the same time a double bacterial quantitative analysis, Agar Traditional method and Alifax HB&L® method which utilizes a Laser Light Scattering Technology.

Results

A 95% concordance between the two different technologies was observed. In two cases the bacterial count's difference was not pathogen correlated. The average time was set at 6hrs for the Alifax method.

Conclusions

When a PUs is diagnosed in a disabled child and clinical signs of infections are present we have to use a fast method for the microbiological quantitative assessment. In our experience a 6hrs method represent a tool useful to prevent severe infections complicating PUs, sometimes dangerous for the life of the child itself.

P16 Antimicrobial use and bacterial resistance in a hospital in Southern Brazil

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Antimicrobial agents are the most common drugs prescribed in hospitals. Several studies suggest that there is a causal association between antimicrobial use and antimicrobial resistance. Many organizations have recommended that antibacterial drug use should be monitored at local and national levels. The anatomical therapeutic chemical (ATC) classification system and the defined daily dose (DDD) as a unit of measurement are recommended by the World Health Organization (WHO) for use in drug consumption studies. Staphylococcus are gram-positive bacteria that causes infections in different parts of the body, with high rates of mortality. Most often, it causes mild infections on the skin, but it can also cause more serious skin infections or infect surgical wounds, the bloodstream, the lungs, or the urinary tract. This study was carried out at the Hospital Santa Cruz (HSC), a general hospital with 184 beds, in Southern Brazil. Antibiotics consumption, including cephalosporins, carbapenems, fluoroquinolones, vancomycin and oxacilin, was computed for adult patients for 18 months and were expressed as the number of defined daily dose (DDD) per 100 patient-days. The frequency of antimicrobial resistance in isolates obtained was evaluated for the bacteria Staphylococcus aureus. The bacterial multiresistance rate was calculated by dividing the number of resistant isolates by the total number of bacterial isolates and multiplying the quotient by 100. The rates in oxacillin-resistant Staphylococcus aureus and ciprofloxacin-resistant Staphylococcus aureus were significantly correlated with DDD of cephalosporins and fluoroquinolones. This study shows that antibiotic exposure remains one important risk factor for antibiotic resistance acquisition by hospitalized patients.

P17 MRSA surveillance as process indicator of control and prevention of hospital infections in an acute healthcare facility (Galliera Hospital-Genova)

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Introduction

At Galliera Hospital, MRSA surveillance is an indicator of the process of prevention, control of infections.

Objective

To estimate the MRSA incidence and control hospital infections/colonizations through microbial surveillance in real time.

Methods

Following MRSA identification, an epidemiological software automatically sends data to the CIO operational group. The infection control nurse designated to fill in the form of computerized surveillance, and performs audits on compliance with preventive measures. Since 2007, budget targets are identified on the risk of infection: 2011 application of the guidelines to hand hygiene.

Results

The indicators of MRSA circulation, as standard and target values, are 45% and 30% respectively.

The data include both hospital and extra hospital infections/colonizations. The hospital MRSA circulation in the years 2007, 2008, 2009 and 2010 was respectively: 48.5%, 47.6%, 58.17%, 59.6%.
MRSA circulation in ICU in the years 2007, 2008, 2009 and 2010 was 42.2%, 28.8%, 57.6% and 43.5% respectively.

In 2008 the WHO project "Clean Care Safe Care" was applied in the ICU and the compliance was 85.1%; in 2010 the compliance dropped to 69.4%, with 3.6 of MRSA infection/colonization per 1000 days of hospital stay (recommended by SIMPIOS).

The figures of MRSA in the 1st quarter of 2011 are the following: 48.83% (overall circulation), 27.9% (incidence in hospital) and 20% (incidence in ICU).

Conclusions

The project on hand hygiene was significant in the control of MRSA circulation. It is hoped to maintain throughout the 2011 the values achieved.

P18 Impact on savings and reduction of HCAI with the implementation of multimodal hand hygiene improvement strategy in a pediatric hospital in El Salvador

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Introduction

Promotion of hand hygiene (HH) is one of the measures proposed by the World Health Organization for reduction of healthcare associated infections (HAI). At Hospital Nacional de Niños Benjamin Bloom (Hospital Bloom) 85% of HAI are found in 5 wards: Pediatric Intensive Care Unit (PICU), PICU Step-down, Neonatal Intensive Care Unit (NICU), newborn, and oncology wards. The HAI rate is between 10-36%. In 2007 Alcohol-Gel (AG) for hand hygiene (HH) was introduced at HNNBB.

Methods

In this retrospective study we describe the four year experience at HNNBB since the implementation of AG. We describe how the HH system changed from

a hand and soap method to the use of AG. We report compliance rates of HH after implementing AG. Finally we describe the impact of AG on HAI.

Results

Before the use of AG, the ratio of HH stations per patient was 1:11. With the availability of AG dispensers in the units, this ratio improved to 1:1. Compliance rates of HH increased from 33.8% to 40.5%. The rates of HAI had an overall reduction from 12% to 7%. Ventilator Associated Pneumonias (VAP) in the NICU decreased from 24.6% to 14.6%, in the PICU from 27% to 12.5%, in the newborns from 26% to 16.4% and in stepdown from 30% al 14.9%. The rates of sepsis in the NICU decreased from 31% to 19.4 %, in PICU from 16% to 12%, newborns 23.4% to 16.7% and in stepdown from 17.8% to 12.3%.The rate of blood stream infections (BSIs) decreased from 12.5/1000 to 8.6 /1000 catheter days. VAP in the PICU decreased from 15.9 to 9.9/1000 ventilator days. In 2007, 3379 days of excessive hospital stay were associated to HAI with a cost of $591,465. In 2010 this was reduced to 1911 days with a cost of $ 372,723.

Discussion

The implementation of AG reduced the total number of cases of HAI. The overall rate decreased by 60% from 2007 to 2010. Most units substantially decreased their HAI rates, with a 32% reduction on catheter related BSIs and 40% reduction in VAP. These measures reduced the days of stay associated to HAI and allowed estimated savings of $200,000.

P19 Use of the WHO Hand Hygiene Self-Assessment Framework Tool in Dutch Hospitals

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Introduction

A working party from the Dutch Society of Infection Control Practitioners (VHIG) and of the Dutch Society for Medical Microbiology (NVMM) decided to use the WHO's Hand Hygiene Self-Assessment Framework, as a tool to progress hand hygiene promotion in the Netherlands. (http://www.who.int/gpsc/country_work/hhsa_framework/en/index.html).

Methods

The framework tool was transformed into an on-line tool (e-trinity, Belgium) that allows data collection and automatic feed-back to all participants. Consultants infection prevention were contacted with support of the societies.

Results

The survey was conducted in April 2011 in order to use the data for future national hand hygiene promotion. The working party has a response rate of 51% (47 of the 93 Dutch hospitals). 40% (37 hospitals) of these was evaluable. Each individual hospitals receive their score automatically. The combined national data were anonymously evaluated. Of the 5 components of Self-Assessment Framework the first (system change) scored best. 5% of the Dutch hospitals have an 'inadequate' hand hygiene level. 70% of the Dutch hospitals have a 'basic' level of hand hygiene. 25% of the Dutch hospitals have reached the level of 'intermediate'. No hospital in the Netherlands has reached the hand hygiene level of 'advanced'.

Discussion

Netherlands is part of a minority of countries that after signage of the WHO pledge did not engage into a national campaign. In addition, a study showed that the compliance with hand hygiene is one of the lowest internationally reported. The results should help to better advance future hand hygiene campaigns, both at national and institutional level.

P20 Dutch Society of Infection Prevention in Healthcare (VHIG)

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The Dutch Society of Infection Prevention in Healthcare, founded in 1973, is since 1987 member of the International Federation of Infection Control (IFIC). VHIG has currently 350 members entitled: Consultant Infection Prevention (CIP).

Major activities

Supporting the members in carrying out their task by the following pillars: knowledge , quality and profiling. The VHIG takes care of accreditation and re-registration every 5 year for all the members if they fulfil the requirements.

Activities

Since 2006 the Dutch advice is 1 FTE CIP per 5000 admissions, or 1 / 178 hospital beds, which cannot fulfilled for different reasons. All Dutch hospitals are committed to pursuing active infection control policies based on the Working group Infection Prevention (WIP). The guidelines are considered professional standards and are used as such by the Healthcare Inspectorate. The professional background of the CIP is nurse, lab technician, and epidemiologist who graduate with a diploma after an in-service post-bachelor training of 18 month.

Perspectives on topical issues in infection prevention

With the Dutch Society for Medical Microbiology the VHIG drafted in 2008 a guideline for quality assurance to achieve continuous quality improvement: 'Kwaliteitsrichtlijn voor Infectiepreventie in Ziekenhuizen'. The document is based on the ISO 9001:2000 series and the derived Directive for Healthcare NPR-CEN/TS 15224:2005. The VHIG try to implement the Recommendations of the Council of European Union on patient safety, including the prevention and control of healthcare associated infections (File:2009/0003 (CNS. Hand hygiene and surveillance surgical side infections are continuous on the agenda.

P21 Student nurses perceptions on hand hygiene: analysis of behavioral and environmental determinants

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Introduction / Objectives

Hand hygiene compliance is poor among nurses. Hand hygiene compliance is influenced by education. Student nurses' compliance in clinical practice and perceptions towards hand hygiene have seldom been described.

Methods

We developed a questionnaire containing demographic data items (i.e. gender and year of education) and items to measure self-reported compliance (10 items, based on the latest WHO recommendations), attitude towards hand hygiene (7 items), perceived social influence (7 items) and observed environmental conditions during clinical practice (5 items).

Results

The questionnaire was filled out by 181 student nurses of the Faculty of Health Care Vesalius, University College Ghent. Students reported a compliance of 50% or below in the following situations: 'before and after direct patient contact' (28%), 'after glove removal' (29%), 'after touching patient surroundings' (65%). Students reported a positive attitude which remained at the same level during the three years. Social influence increased although not significantly (Kruskal-Wallis P=0.388). The presence of an observer or mentor during clinical practice was reported to increase social pressure. In general, students were satisfied with the

environmental conditions (97%) and with the amount of attention the wards spent on hand hygiene (86%). However, students reported insufficient disinfectant on the carts (21%) and in the patient's rooms (31%).

Conclusion

Undergraduate student nurses reported poor hand hygiene compliance in several specific situations. The students' attitude towards hand hygiene was positive. Being observed during clinical practice increases social pressure. Some shortcomings in relation to the ward environment were identified.

P22 Hand hygiene knowledge in Long-Term Care Facilities (LTCFS): A Multicentre pilot study

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Introduction / Objectives

Until now, promotion of hand hygiene was mostly targeted to acute care facilities. Yet, little is known about knowledge of hand hygiene recommendations in chronic care facilities. The objective of this study was to evaluate hand hygiene knowledge in health care workers in Flemish LTCFs.

Methods

We developed a questionnaire based on campaign material that was distributed by the Flemish government in order to improve hand hygiene in LTCFs. The quiz, based on the most recent WHO guidelines contains 18 specific healthcare related situations in which hand hygiene or wearing gloves is recommended. It was presented to a stratified sample of personnel from two LTCFs in January 2011, prior to continuing education regarding hand hygiene. Frequencies and total scores were calculated. Mann-Whitney test was used to compare scores in both LTCFs. Statistical analyses were performed using PASW Statistics 18 (SPSS, Chicago, IL, US).

Results

81 LTCF health care workers participated. Response was 100%. The mean score was 9.21 on 18 items (Standard Deviation 2.58, min. 1, max. 15) or 51%. No significant differences were found between the two LTCFs. Some items scored below 50%. These items were related to four hand hygiene indication groups: 'before patient contact' (e.g. hygienic care, taking blood pressure, feeding), 'after glove removal', 'before a clean/aseptic procedure' (e.g. wound care and IM injections) and 'in case of risk of contact with body fluids' (e.g. oral medication administration).

Conclusion

Our study identified several gaps in the knowledge about hand hygiene recommendations in LTCF health care workers. These results indicate substantial room for improvement in this specific group of HCWs.

Integration of infection prevention and control program into your quality and patient safety program P23

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According to the Canadian Patient Safety Dictionary (2003), patient safety is defined as the reduction and mitigation of unsafe acts within the healthcare system through the use of best practices shown to lead to optimal patient outcomes. Patient safety is a system-wide issue, which requires the need to forego blame to focus on why errors occurred, and how to design safer processes to make it easier for clinicians to do the right thing. Using the IHI Global Trigger Tool VCH has determined that over 55% of all adverse events are infection related therefore, incorporating a strong infection prevention and control program into your quality and safety program is essential to improve patient safety. Vancouver Coastal Health Authority (VCH) serves 25% of the population of British Columbia, incorporating 14 hospitals (including Vancouver General Hospital, Lion's Gate Hospital and Richmond Hospital), and 2 diagnostic treatment

centres, with over 8900 acute care and residential beds. VCH delivers acute, residential, mental health and community services with a staff of over 21,000 and an operating budget of $2.4 billion. It is one of five regional health authorities across B.C. Over the past 5 years we have successfully integrated our IPAC program into the overall Quality and Patient Safety program. This presentation will focus on strategies used to integrate these programs to build a strong program across an entire health system that has standardized approaches, frameworks and organizational structure supports that have ultimately led to reduced adverse event rates for our patients.

P24 Hand hygiene in a healthcare facility in the Bahamas. Knowledge, attitude, self reported practices and barriers

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Background

Hand hygiene is effective in reducing healthcare associated infections (HAIs); however, compliance is low amongst Healthcare workers (HCW). Data is lacking in the Bahamas, therefore, this study will evaluate the knowledge, attitude, self reported practices and barriers to hand hygiene of HCW at a healthcare facility in the Bahamas.

Methods

A convenience survey was distributed between January and November 2010 during the hospital's annual review sessions. The survey assessed knowledge, attitude, self reported practices and barriers to hand hygiene of HCW at an acute care facility in the Bahamas.

Results

This study was inclusive of 310 respondents: Nursing (50%), Clinical Support (20%) and other (30%). Ninety-seven percent of HCW were aware of the hospital's hand hygiene policy; 94.49% acknowledged a strong or very strong relationship between hand hygiene and HAIs. Eighty percent estimated their hand hygiene compliance rate to be between 81-100%. Barriers to non compliance were: Availability (15%), Forget (12%); Too Busy (10%), Location (8%) and Multi-factorial (12%). Sixty-seven percent of participants were never reminded by patients to perform hand hygiene; 33% would remind colleges greater than 70% of the times when hand hygiene is forgotten. HCW satisfaction with hand hygiene products and material was 96% and 90% respectively.

Conclusion

HCW were knowledgeable of the role of hand hygiene in preventing infections and of the hospital's protocols. Self reported hand hygiene rates may have been over estimated and requires validation. For greater compliance, the issues of availability; access to supplies; patients and HCW empowerment need to be addressed.

Antimicrobial activity of chitosan coated urinary catheter against urinary Escherichia coli isolates P25

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Urinary tract infection is the most frequently reported nosocomial infection, accounting for up to 40% of infections. A significant percentage of these infections are associated with urinary catheters. Chitosan, a polysaccharide industrially derived from partial deacetylation of chitin, is an antimicrobial that has shown promise, in solution or as surface coating. Its antimicrobial activity varies considerably with the type of chitosan, the target organism and the environment in which it is applied. The purpose of this study was to determine the antimicrobial activity of chitosan coated urinary catheter against 19 urinary *Escherichia coli* isolates with two different methods. Uncoated catheter was used as catheter control and E.coli ATCC 25922 was used as control strain. Chitosan coated urinary catheter didn't show antibacterial activity against all tested bacteria with two methods. In conclusion, there is no difference between antibacterial activity of chitosan coated and uncoated urinary catheters against urinary *E. coli* isolates.

P26 Analysis of prevalence, risk factor, role of environment in *Clostridium* infection among hospitalized patients in Egypt

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We conducted a prospective study to evaluate the prevalence and epidemiology of *Clostridium difficile* infection (CDI) in Egypt in two large tertiary care hospitals Ain Shams University Specialized Hospital (ASHUSH) and Madii Medical centers (MMC) over a 2-year period, January 2008 to December 2010. All patients with reports of diarrhea were included in the study to identify the risk factors. A total of 200 stool samples from patients with suspected CDI were obtained and tested for *Clostridium difficile* toxin A & B using RIDASCREEN. During this period, 20 (10%) out of 200 patients met the case definition of CDI. Of these, 14 (70%) were hospital-acquired and 6 (30%) were admitted with community acquired diarrhea. Thus, the prevalence of hospital acquired CDI amongst patients with diarrhea was 10% over the study period. Our data showed that 42.9% of the CDI patients were above 60 years, of which >79% were aged 71 years and above. Analysis of different risk factor showed that patients with CDI were significantly associated with exposure to immunosuppressive drugs in 5 cases (25%), parenteral feeding via nasogastric tube 4 cases (20%), major surgery within 2 months of the onset of the disease 8 cases (40%), ICU admission 8 (40%), antibiotic therapy 19 cases (95%).

P27 Reduction of device-associated infections (DAI) and antibiotics consumption (AC) after process measures implementation in an Intensive Care Unit (ICU)

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Introduction

DAI in ICU affect patient safety, give rise to significant AC, in turn responsible of bacterial resistance.

Objective

Describe the impact of process controls -check lists, bundles-, on DAI and parenteral AC.

Material and Methods

Quasi experimental study in a adult Medical/Surgical major teaching ICU. Strategies described in Institute of Healthcare Improvement (IHI) "How to Guide" documents were implemented; in order to avoid ventilator associated pneumonia (VAP/PNE), central line-associated blood stream infections (BSI/CL) and urinary catheter-associated infections (UC/UTI). Pre intervention period A: July 2009-February 2010; post intervention period B: March-November 2010. DAI and AC rates were calculated as described in NHSN Modules. Mann-Whitney test was used to compare DAI and AC rates.

Results

VAP/PNE rate dropped from 10.3‰ to 3.5‰ (p 0.01) -66% reduction-; BSI/CL rate dropped from 5.3‰ to 3.6‰ (p 0.31) -32% reduction-; UC/UTI rate from 3‰ to 0.6‰ (p 0.24) -81.2% reduction. Total AC was significantly reduced (p 0.012), as ampicilin and ampicilin/sulbactam (p 0.043), cefepime (p 0.034), carbapenem (0.020), vancomycin and teicoplanin (p 0.020) and quinolones (p 0.043).

Conclusions

Process controls implementation was associated with statistically significant reduction of VAP/NEU, a non statistically significant reduction of BSI/CL and UC/UTI and a statistically significant reduction of total parenteral AC, ampicilin, ampicilin/sulbactam, cefepime, carbapenem, vancomycin-teicoplanin and quinolones. As expected, this strategy for DAI avoidance was effective for both DAI and AC reduction.

P28 Prevalence study on surgical site infections at the

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The aim of the study is to reveal the prevalence of SSI in different surgical services and the use of antibiotic prophylaxis in preventing SSI.

Patients and methods

The study is transactional which means that all surgical services have been evaluated during one single day. All patients presented at the hospital during the evaluation day have been included. The criteria of CDC have been used in the description of the SSI .

Results

An evaluation of 282 patients operated and hospitalized during the study period was carried out. The preoperative hospitalization period was 3,2 days. Aminoglycosides and cephalosporins were used as antibiotic prophylaxis in 75% of the patients. Gentamicin and cefazolin were the most frequently used antibiotics. SSI presented 49.4% of all hospital acquired infections in surgery services. 45 SSI were observed, out of which 19 were superficial, 19 deep, and 7 organ/cavity SSIs. The prevalence of SSI by wound category was: 7.9% for clean, 8.3% for clean-contaminated, 39.6% for contaminated ($p<0,001$) and 46.2% for dirty wounds ($p<0.001$). The microorganisms isolated are presented as follows: *S. aureus* 18%, Gram negatives 17%, *P. aeruginosa* 16%, *E. coli* 15%, *S. epidermidis* 7%, *Klebsiella* ssp 7%, *Proteus* 4%, *Serratia marcescens* 4%, *Staphylococcus* spp. 3% and others 9%.

Conclusions

The situation of SSI is still problematic in the UHC "Mother Teresa" of Tirana. The following measures are proposed in order to improve it:

- Make surgeons feel responsible about the gravity of the problem.
- Support the hospital infection control service.
- Establish standard protocols for the use of antibiotics.

The role of SSI surveillance in preventing SSI P29

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Background

There are no significant data on the prevalence of surgical site infections in Albania. Some studies of incidence have been carried out only in one of the surgery services of the UHC. These data indicate the need for more accurate and thorough study on surgical site infections. The UHC is the biggest hospital in Albania with around 1600 beds and the only teaching hospital, hence the data produced by the study are very representative. The aim of the study is to analyze the role that play the SSI surveillance in preventing SSI.

Patients and methods

The study is a retrospective-prospective one. We have achieved data of SSI in one service of surgery in the University Hospital Center Mother Teresa, that is the only that had performed some consecutive studies on incidence of SSI, and have compared data from progressive studies and have also compared them with data that results from a prevalence study for all surgical services of the hospital center.

Results

Data shows a progressive decrease of the incidence of SSI from one follow up study to the other. It resulted also that this service of general surgery has the lowest prevalence of SSI from all surgical services in the compressive prevalence study.

Conclusions

The surveillance of SSI, even if intermittent, plays an important role in preventing SSI.

P30 Applying lean methodology to reduce *Clostridum difficile* infection (CDI) rates

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Issue

During December 2008, five months after Ontario Hospitals began publicly reporting CDI rates using standardized case definitions for surveillance and reporting; the first CDI outbreak was declared at our hospital.

Project

In response to the dramatic rise of infections, a multidisciplinary Working Group was established with active, voluntary participation from front line staff.
Using Lean methodology to motivate and engage the members; one technique called a point kaizen event was conducted, during which the members mapped out the process steps required after identifying a symptomatic patient. The members were able to develop process improvements for: early recognition and patient placement in private room accommodation, documentation, environmental cleaning using a sporacidal agent, and standardized treatment protocols.

The 5S principles, consisting of:

1. Sort - needed and unneeded items
2. Store - closest to point of use
3. Shine - cleanliness of the workplace
4. Standardize - equipment and processes through visual methods
5. Sustain - conduct regular audits and provide immediate feedback

were applied to standardize a bowel movement charting tool using consistent definitions, the Isolation Personal Protective Equipment (PPE) carts, and commode cleaning. Communication strategies were enhanced with revised, easy-to-read Additional Precaution signs, and colour coded magnets for patient room cleaning.

Results

By breaking down barriers, and empowering front line staff to take action; standards of work were developed, including visual cues to optimize communication. As of March 31, 2011, the Lean process improvements have had a positive impact in reducing the CDI rate from 0.87 to 0.17 per 1000 patient days.

An ethnographic study of infection prevention and control practices in a mental health trust P31

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Background

Healthcare associated infections (HCAIs) and infection prevention and control (IPC) remain high on the international political and public agenda. Many are preventable often resulting from poor compliance with IPC practices by healthcare workers (HCW). Focus to date has been on acute healthcare facilities with little research on how HCW in mental health setting conceptualise the problem.

Aims

To explore the perceptions of HCW in mental health care facilities into what affects IPC practices.

Methods

An ethnographic approach was undertaken utilising semi-structured in-depth face to face interviews with eighteen key experienced HCW and participant observations of discussion held during four ward rounds. Interviews were recorded and transcribed verbatim and field notes taken which were subjected to thematic content analysis.

Results

Four main categories emerged: perceived lack of training/ education both pre and post registration in relation to IPC; risks of HCAIs to both patients and staff; effect of organisational culture on compliance with IPC: effect of leadership and role models.

Discussion

Patients with severe mental illnesses have more underlying physical health problems than the general population which predisposes them to risk of acquiring HCAIs. Therefore, it is essential to gain more insight into what affects and informs IPC practice in this area.

Conclusion

This study contributes to original knowledge in what affects the practices of HCW in a mental health setting in relation to IPC. It also helps to inform practice, education and healthcare policy. In addition, it supports and makes recommendations for further research in this field.

P32 Ensuring appropriate ward-based prescribing in a secondary care mental health trust

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Introduction

Although patients with severe mental illness (SMI) are at less risk of healthcare infections (HCAIs) as those in acute care facilities and receive less antimicrobials, compliance with prescribing is nonetheless still important. This poster describes an initiative to improve appropriate prescribing in this setting.

Aims and objective

- To promote effective prescribing to reflect local sensitivity patterns.
- To minimise the risk of developing resistant micro-organisms in this setting.

Method

Following a review and update of the Antimicrobial Guidelines an audit tool was developed. A summary was issued to all Trust doctors and training delivered at medical staff induction and annual medicine training course. Prescribing compliance was then audited over a two week period, initially at six monthly, then quarterly intervals. Results were fedback to Medicine Management Group, Infection Prevention and Control Committee, Consultant Psychiatrists and other medical personnel. Presentations were also delivered at the Research and Audit Group.

Results

250-300 in-patient charts were reviewed daily during the data collection period. An average of 28 antimicrobials was prescribed during each audit. Average compliance with prescribing was 93%. Compliance with documentation ranged from 61-69%.

Discussion

Compliance against prescribing policy was good although documentation remains sub-optimal. To date much of the focus on antimicrobial compliance has been on acute care with little information available regarding mental health care settings. Patientswith SMI can also be at risk of HCAIs and often transfer between care facilities. Therefore more work is needed to improve and monitor antimicrobial prescribing in such settings to help prevent antimicrobial resistance.

Incidence of MRSA in a mental health trust P33

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Introduction

Patients with severe mental illness (SMI) have predisposing risk factors for HCAIs such as Methicillin resistant *Staphylococcus aureus* (MRSA) having more underlying physical health problems than the general population. However, there is little information available in these areas.

Aims/Objectives

To establish the incidence of MRSA and risk factors in a mental health setting.

Methods

All patients admitted over a twelve month period that fitted the high risk criteria were screened on admission

for MRSA. These included patients transferred from acute care, nursing/residential homes, patients with open wounds/invasive devices and those already known to have MRSA. Screening swabs included nose, groin and any open wounds/skin lesions.

Results

Of 3022 patients admitted during the study period 617 (20%) fitted the criteria for screening. 20 patients refused (3%). MRSA was isolated from 33 (5.5%). An additional 11 patients were identified via ward and laboratory based surveillance from patients who did not fit the screening criteria or had initially refused screening. 33 (73%) patients were >60 years of age. 33 (73%) had co-morbidities such as cardiac and respiratory disease and diabetes. 28 (64%) were admitted from acute, nursing and residential care facilities.

Conclusion

Although the incidence of MRSA may appear low in this study patients with SMI are often 'revolving door' patients for acute healthcare facilities and a whole health economy approach is required to reduce the burden of MRSA and other HCAIs. Therefore it is essential to gain further insight into HCAI in this area.

P34 Prevention of multidrug resistant bacteria: a real burden

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Multi-drug resistant (MDR) bacteria are microorganisms resistant to one or more classes of antimicrobial agents. Examples are MRSA and VRE, these pathogens are frequently resistant to most available antimicrobials. In addition, certain gram negative bacteria are also resistant to multiple classes of antimicrobial agents. These pathogens deserve special attention since, in clinical practice; options for treating them are often extremely limited. Recording of MDR bacteria represents an integral part of any infection control and prevention program in health-care settings. In a 1000 beds university hospital in Cairo, recording of MDR bacteria is done on daily basis. Data of nine years of MRSA (2002-2010) and three years of MDR gram negative bacteria (2008-2010), including carbapenem resistance, were collected. Rates for MRSA ranged as 6%- 80% for 2002-2004, 10.5%-63.6% for 2005-2007 and 0%-28.5% for 2008-2010. For MDR gram negative bacteria carbapenem resistance showed high proportions as 28%-100% for *Pseudomonas* spp, 15%-100% for *Acinetobacter baumannii* and 0%-100% for *Klebsiella pneumoniae* over 2008 through 2010. All isolates were hospital acquired. Analysis of data revealed an improvement of MRSA pattern while the condition is still critical for MDR-carbapenem resistant gram negative bacteria. Isolation measures were boosted and contact precautions were adapted and strictly followed. In addition formulation of hospital antibiotic policies was started at departmental level. Facing the problem of MDR bacteria is a challenge for any infection control and prevention system. The burden of solving this problem does exist and should be handled wisely as not to miss improvement and success.

P35 Hand Hygiene Compliance Monitoring Program - Experiences from a Hungarian Hospital

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Healthcare associated infections (HAIs) cause a huge problem all over the world. They outbreak in 8-10% of patients, decreasing patient safety, increasing expenses and reducing hospital's reputation level. Nowdays the number of MultiDrug Resistant pathogens increases, about 60% of HAIs are caused by these hardly treatable bacteria. Human hand plays a significant role in these pathogens' transmission and developing more than 70% of HAIs. Getting local data, Aladar Petz County Teaching Hospital was the first in Europe

who joined to Hand Hygiene Compliance Monitoring Program of McGuckin Methods International (MMI) in 2009. This connection was organised by Ecolab. The poster presents the executing process and results of the 12 months study. In this period we organised educational courses for healthcare workers and hand hygiene product consumption was reported with the data of patient turnover. Benchmarked reports came back monthly from MMI. Our figures were compared with the results of similar sized hospital units which are collected in a representative database of hundreds of hospitals in the United States. We demonstrate the setting of hand hygiene compliance and HAIs in the Intensive Care Unit. The program was successful, it was an easy and well-tried way to meet important standards and recommendations.

P36 The impact of multidrug resistance in two Romanian university hospitals

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Introduction

Hospital acquired infections and bacterial multidrug resistance (MDR) involve high costs, difficult to manage in medical systems with limited resources. Purpose: This study, part of the PNCDII 42121/2008 national research project, proposed the investigation of multidrug-resistant bacteria prevalence, concurrent with costs evaluation in two ICU departments from Timisoara university hospitals: Emergency Clinical County Hospital (ECCH) and Institute of Cardiovascular Diseases (ICD).

Methods

During January-October 2010, we performed the surveillance of bacterial resistance, focused on the following major exponents: Methicillin-resistant Staphylococcus aureus (MRSA), extended spectrum beta-lactamase (ESBL) producing enterobacteria and carbapenem-resistant non-fermentative bacteria, with duplicates and colonisation germs exclusion. Selected germs identification and phenotyping were performed with the help of automatic VITEK 2 compact system, using VITEK 2 GP/GN identification cards and AST cards for antimicrobial sensitivity tests. We have also performed Hodge tests for ESBL producing carbapenem resistant enterobacteria.

Results

In the ECCH we isolated 534 bacterial strains, with 35, 44% prevalence for MRSA, 37, 32% ESBL enterobacteria and 43, 94% carbapenem-resistant non-fermenters. From 73 strains isolated from ICD, the MRSA prevalence was 8, 00%, respectively 16, 67%for ESBL enterobacteria and 11, 11% for carbapeneme-resistant non-fermenters. All the Hodge tests were negative. The average number of antimicrobial treatment days/MDR infectious episode, was 9.11days (ECCH)/ 29.57days (ICD), with an average hospitalisation cost of 3657.35 E/patient (ECCH)/3780.87 E/patient (ICD).

Conclusions

The study established an upward trend of carbapenem-resistant non-fermenters and evaluated the burden produced on our sanitary system, by infections with MDR bacteria.

Monitoring the use of appropriate assets of antibiotics P37

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Object

Following the resolution of the regional Liguria Council of the 1268 09/25/2009 where it was approved the procedure for monitoring the appropriate

antibiotic employ, have set up a working group aimed at enhancing the culture of antibiotic therapy in individual operational units for hospitals, to promote the proper use and limit the emergence of resistances.

Methods

Regional board was modified for a better interpretability of the data, it was monitored the use of active antibiotics on multidrug resistant drugs, paying attention to in clinical use, dosage and route of administration. Were carried out meetings to share goals and has been developed and distributed a pocket handbook of antibiotics available in the Hospital, contains topic regarding the pharmacokinetics and pharmacodynamics, dosage, route of administration and storage, and a list of protocols "off label" common and systematic with bibliography entry. The collection and analysis of the cards, was returned to the wards as part of clinical audit trails.

Result

Analysis of the cards collected from March-December /2010 revealed a good compilation 88%, therapy has been set empirically in 76% of cases and targeted 21%. Rationale expressed in 80%, in accordance with 71%.

Conclusions

The route has been perceived in most cases as a workload imposed rather than a tool for improving clinical practice. However, has been important stimulus for growth and sharing of emerging issues that have highlighted critical cultural heterogeneity and therapeutic approach. This goal is therefore to implement the specific knowledge and awareness to the complex issue.

P38 Surveillance of surgical site infections after open heart surgery

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Objectives

The aim of this study is to evaluate the incidence of surgical site infections (SSIs) following open heart surgery and to identify possible risk factors for SSIs.

Methods

A prospective surveillance was performed during the period from January 2011 to April 2011 at the Intensiv CardioSurgery Unit of the Universitätsklinikum Essen, Germany. Patients were evaluated daily during hospitalization and when re-admitted to Surgical Unit for any SSIs occurring after discharge. The wound infections were defined according to the Centers for Disease Control and Prevention (CDC) and U.S. National Nosocomial Infections Surveillance (NNIS) system criteria. The descriptive epidemiological method was used.

Results

In total 305 patients were included, mean age was 67.2 years, 25.6% of patients were female. 82.6% were elective procedures, 61.3% represented by coronary artery bypass grafting (CABG). Methicillin-resistant *Staphylococcus aureus* (MRSA) screening was performed by 92.1% of patients, and perioperative antibiotic prophylaxis with a first-generation cephalosporin was administered in 93% of cases. SSIs occurred in 5 patients (1.6%): 2 (0.6%) were superficial infections and 3 (1%) deep infections. All infections occurred post CABG procedures and were diagnosed after discharge. All patients had BMI >30, ASA score 3. Three patients had blood-glucose levels >180 mg/dl during the postoperative 24hours.

Conclusion

Preventing SSIs in the operating room is a primary goal for the surgical team. Attention should be paid to antibiotic prophylaxis and Methicillin-resistant *Staphylococcus aureus* (MRSA) nasal carriage treatment.

Although the incidence rate of SSIs is low, it is necessary to maintain countinous surveillance and to implement preventive measures.

P39 Running a highly computerized, national, mandatory system with 30 days active post-discharge follow-up: methodology of the norwegian surveillance system for hospital-acquired infections

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Background

The Norwegian Surveillance System for Hospital-acquired Infections (NOIS) was introduced by regulation in 2005. The aim of this study is to describe the framwork of NOIS, the participation by hospitals, the expierince gained during the first five years of operation (2005-2009).

Methods

NOIS is based on the protocols published by HELICS and CDC. In addition, NOIS has a combination of characteristics which merit a more detailed description: It is a mandatory, national surveillance system. It has a largely computerized data collection system in the hospitals.It has an active, mandatory post-discharge follow-up for 30 days (one year for implants) after surgery.

Results

Thirty of 55 hospitals participated in 2005, increasing to all but one in 2009 (54 hospitals). The survellance system volume has increased from 2371 procedures to 6089. 90.7% of the patients met the criteria for post-discharge follow-up being completed. 84.4 % (1115/1321) of the infections were detected post-discharge. The mean number of days until infection was 13.1 whereas the mean postoperative length of stay was 5.6 days.

Conclusions

Post-discharge follow-up is important in order to detect all infections. A national mandatory surveillance system will give a broader and better overview of the infection status in a country, as the characteristics of hospitals which participate in a voluntary system may differ from those not participating. Most of the risk factors and patient information can be gathered from existing computer systems.

Needlestick and sharps injuries experienced by present and future nurses and their prevention P40

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Aims

To define the frequency of needlestick and sharps injuries experienced by present and future nurses; to assess and compare the reasons and factors affecting needlestick and sharps injuries experienced by present and future nurses; to define how present and future nurses are informed about registration and prophylaxis of needlestick and sharps injuries.

Methods

In December 2010, a survey of present and future nurses of X hospital performing invasive injections was carried out. Future nurses had their practice at this hospital. 250 questionnaires were distributed.

Results

During the last twelve months needlestick and sharps injuries were experienced by 78% of future nurses and 38.5% of present nurses. The highest risk of experiencing needlestick and sharps injuries was defined among future nurses (59%) and present nurses (46%) while working at procedure rooms. Most nurses (51%) got injuries when putting a case on a used needle, whereas future nurses (49%) were injured when they were breaking an ampoule. Prevailing reasons of injuries were inattentiveness, hurry (64% of future nurses and 46% of present nurses) and work

overload (12% of future nurses and 43% of present nurses). 71% of future nurses who experienced injuries were wearing single gloves, 29% were not wearing gloves at all. 24.3% of present nurses were not wearing gloves during their last injury, and 73% were wearing single gloves. 92% of future nurses and 45.9% of present nurses did not register their injuries. More of present nurses (96.9%) than the future ones (40%) were familiar with the rules of needlestick and sharps injuries notification, registration and observation and prophylaxis. The majority of nurses (81%) and only 39% of future nurses knew how to behave in case of needlestick and sharps injuries. Only 16.9% of nurses and 11% of future nurses were vaccinated by three doses of HBV vaccine. The majority (82%) of the future nurses participating in the research were not examines concerning hepatitis B virus.

Conclusions

During the last twelve months more than half of the respondents experienced needlestick and sharps injuries. It was defined that the biggest possibility to experience needlestick and sharps injuries was when working in procedure rooms. Prevailing reasons of injuries were inattentiveness, hurry and work overload. The research showed that bigger attention ought to be paid to registration of needlestick and sharps injuries and vaccination of nurses.

P41 Surgical-site infection after cardiac surgery

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Introduction

Despite modern surgical techniques, preoperative preventive use of antibiotics and optimal treatment of operative site, surgic al site infections (SSI) are significant medical problem in the countries worldwide.

Objective

The aim of this study was to estimate the frequency of SSI after open heart surgery and to identify the most frequent causes of these infections.

Material And Methods

A prospective cohort study was performed during the period from January 2008 to December 2009 at the Clinic of Cardiovascular Surgery of the Institute of Cardiovascular Diseases of Vojvodina, Serbia. The surveillance was consistent throughout the study period. During hospitalization, patients were evaluated daily by the infection control nurse. Isolation, identification and sensitivity tests of causative agents to antimicrobial drugs, obtained from patients' material, were carried out by standard microbiological methods. The descriptive epidemiological method was used. The incidence rates of hospital infections were calculated.

Results

During the study period, among 23 patients, 24 SSIs were registered. The average incidence rate of patients with SSI was 0.98% and SSI rate was 1.02% (ranged from 0% to 3.7%). There was no difference in the incidence rates according to gender (p=0.65).The mean age of patients with SSI was 64.7 years. Except one, all patients had the ASA score higher than 2. The patients with SSIs were hospitalized approximately 3.8 times longer than the patient without SSI (p=0.03). The most common causes of SSI were: *Staphylococcus aureus* (30%), coagulasa-negative *Staphylococcus* spp, *Acinetobacter* spp (8%), *Enterococcus* spp and *Klebsiella pneumoniae*.

Conclusion

Although the incidence rate of hospital infections is low, it is necessary to maintain continous surveillance of surgical site infections and to implement the preventive measures.

P42 The Insertion of a Peripheral Vascular Catheter

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Background

The insertion of a Peripheral Vascular Catheter (PVC) is one of the most frequently performed care intervention for the hospitalised patient. All indwelling medical devices pose a serious risk to the patient of acquiring a Healthcare Associated Infection (HCAI) as the body's natural defences are breached during insertion.

The recent national guidelines for the Prevention of Intravascular Catheter-related Infection in Ireland (SARI, 2010) advocate the use of a PVC care bundle to improve compliance with evidence-based recommendations for this care intervention. The care bundle concept is a simple quality improvement tool which has demonstrated sustained success in critical care. However, there is a paucity of research which has evaluated the process involved and the impact on patient outcomes of implementing such a care bundle in the acute ward environment.

Aims

This study aimed to evaluate the implementation process for introducing a PVC care bundle in an acute care setting and assess the requirements for hospital implementation of the PVC care bundle.

Method

A mixed method approach was used to evaluate the implementation process for introducing the PVC care bundle. Donabedian's framework for assessing the quality of care was used as a guide for developing and evaluating the process under the categories of structure, process and outcome.

Result

The care bundle concept can be successful in the acute care environment. Care and management of this frequent care intervention improved. There was a reduction in the number of patients with PVC insitu that were not required. This was achieved through compliance with the PVC care bundle.

Conclusion

Implementation of quality improvements such as care bundles can be achieved at ward level, however, successful implementation throughout the hospital requires collaboration and commitment from all levels within the organisation. Multidisciplinary education for shared interventions is important to achieve improved patient outcomes.

Resistance of microbial isolates among health care facilities of Rome (IT): the 2002-08 'SEERBIO' report P43

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Organization of health services, in Italy, is held by administrative regions; consequently, epidemiology of regional context is crucial. Concerning microbial resistance, only few regions have implemented official surveillance programs. In the region of Rome (Lazio) there is no such system active. In this work, we studied – on voluntary basis - microbial resistance in the health facilities of Rome.

We performed a collection of laboratory data from 12 hospitals of Rome, along 2002-08. We included unique clinical isolates, from inpatients. Yearly and cumulative proportion of non-susceptible isolates was calculated for *S. aureus* vs. oxacillin (MRSA), *E. faecalis* and *E. faecium* vs. vancomycin or teicoplanin (VRE), *E. coli - P. mirabilis – K. pneumoniae* vs. ceftazidime or cefotaxime (ESBL), *P. aeruginosa* and *A. baumannii* vs. imipenem or meropenem (respectively, MDRPA and MDRAB).

We evaluated more than 60,000 records (50% from medical wards). The most frequent specimens were urines (30% of total), followed by blood cultures (20%) and respiratory (18%) samples. Cumulatively, >10% of isolates showed a resistant phenotype: in absolute, the most represented were MRSA and ESBL strains (globally, 70% of resistant organisms). Over time, proportion of resistance changed: percentage of MRSA decreased (45% to 30%). Conversely, we observed increasing of VRE (5% to 10%), ESBL *E. coli* (10% to 20%), ESBL *K. pneumoniae* (20% to 30%), and MDRAB (15% to 60%).

In health facilities of Rome, one over ten clinical isolates seems to be a putative multi-resistant. MRSA appeared 'dominant' in the recent past, although oxacillin resistance is now decreasing. We observed trends of growth for ESBL, MDRAB and VRE strains.

P44 A RealTime-NASBA based method for blaKPC gene detection in *Klebsiella pneumoniae* strains

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The dissemination of KPC-producing *Klebsiella pneumoniae* is of great concern to public health services worldwide. The aim of the study was to evaluate the usefulness of the EasyQ method (bioMérieux) to detect blaKPC genes in *K. pneumoniae* isolates.

Methods

60 well characterized *K. pneumoniae* strains collected from 10 Italian hospitals between 2009-2011 were studied. Imipenem, meropenem and ertapenem MIC determinations were performed using Etest (bioMérieux). Confirmatory modified Hodge and synergistic activity tests with boronic acid and EDTA were performed. All isolates were screened for the presence of blaKPC genes using the EasyQ RealTime-NASBA based method. The RealTime results were compared with both phenotypic and molecular data previously obtained.

Results

16/60 strains were KPC-negative: 10/16 and 1/16 of these were carbapenems resistant (EUCAST Guidelines) due to an VIM-1 enzyme production or a decreased outer-membrane permeability respectively. The remaining 5/16 carbapenems susceptible strains were cephalosoprins and aminoglycosides resistant: 3/5 were CTX-M-15 and 2/5 Arm-producers. 44/60 strains from 7 hospitals were KPC-positive by PCR. Direct sequencing performed on 15/44 strains identified in 10 cases a blaKPC-2 and in the remaining 5/44 a blaKPC-3 genes. Results in agreement were obtained for all the 16/60 KPC negative strains using both phenotypic and RealTime-NASBA molecular tests. EasyQ assay showed 100% specificity. For all 44 KPC-positive strains carbapenemase production was confirmed by conventional susceptibility testing and EasyQ.

Conclusions

In KPC-producing *K. pneumoniae* infections, antibiotic options are dramatically restricted. EasyQ-KPC assay, allowing a rapid detection of blaKPC genes, limits the spread of such strains in healthcare settings.

P45 Aosta Regional Hospital: use of carbapenems, glycopeptides and "new" antibiotics: one year survey

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Background

Use of carbapenems , glycopeptides and of the few innovative antibacterials available deserve close attention and monitoring, as they mirror in Hospital spread of multiresistant germs and/or lack of a sound antibiotic policy. Aim of our study was to analyze use of the above cited antibiotics by Daily Defining Doses (DDD) in the Aosta regional Hospital, a 430 beds, tertiary care structure, since April 2010 to March 2011; innovative molecules studied were linezolid, daptomicin and tygeciclin.

Results

A steady increase was shown for all drugs, with the possible exception of carbapenems (table); "new drugs" increase regarded tygecicline, then linezolid and daptomicine, in that order. mean DDD, by trimester of follow-up 1st 2nd 3rd 4th all drugs 3172 2805 3604 5006 glycopeptides 2020 1622 2240 2834 carbapenems 81 304 384 246 "new" drugs 396 286 291 639 levofloxacin 675 467 688 1286 antibiotic use (percent), by hospital area surgery medicine ICU LTC*- territory inf. Dis. oncology glycopeptides 15 24 14 29 12 6 carbapenems 33 15 13 11 13 12 "new" drugs 25 10 25 27 11 5 levofloxacin 21 34 6 14 18 7 *LTC: long-term care. The increasing trend was confirmed for all Hospital areas, with main slopes in ICU and LTC-territory.

Conclusions

Our data may be explained by increasing in-Hospital spread of multiresistant bacteria and/or by a lack of appropriate antibiotic prescription. In particular, the increase in the selected drugs use in the LTC-territory department is worrisome and deserves close control and further studies; our results stress the need for antibiotic stewardship and limited availability of selected antibiotics.

P46 Aosta Regional Hospital: twenty-eight years of healthcare-associated-infections (HAI's) prevalence studies; what's to be concluded?

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Background

Since 1983 at Aosta regional Hospital (about 440 beds, tertiary care), 12 prevalence study of HAI's have been performed, as a cornerstone of surveillance activities; of note, since 1983 1- prevalence studies have been designed and conducted by the same professional (MM) and 2- covered all Hospital wards/ departments, with same methods over years, updated following state-of-the-art guide lines. This given, aim of this study was to analyze trends of HAI's over years, both quantitative and qualitative, drawing conclusions about the experience and focusing over its usefulness in the setting of HAI's prevention.

Results are summarized in the table.

Year		Overall Prevalence (%)		
		UTI	LRTI	SSI
1983	12,6	70	15	6
1985	8,7	50	16	14
1987	4,9	27	16	16
1993	5	29	21	17
May 00	4,5	27	28	0
Dec 00	9,5	38	21	17
2002	6	28	28	17
2005	9,8	25	33	4
2006	8	46	25	8
2007	8,6	28	20	8
2008	8,7	45	45	4,5
2010	11,7	25	34	3

UTI: urinary Tract Infections, LRTI: Lower Respiratory Tract Infections, SSI: Surgical Site Infections

Conclusions

1. UTI decreased over years after closed circuits introduction coupled with continuous education.
2. lower respiratory tract infections increased mainly because of patients ageing, they now deserve closest prevention efforts, including government of the length-of-stay.
3. the decrease of SSI is multifactor, especially: lower length-of-stay, education, increase of laparoscopic surgery.

After the undulating and maybe unpredictable HAI prevalence ratios obtained over many years we witness that HAI prevention is a never-ending affair, pivoted on surveillance and education.

P47

Results of the prevention system of health care staff from the exposure of bloodborne pathogens at Vilnius University Hospital Santariskiu Klinikos during 2009 – 2010

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Introduction

Health care staff can be exposed to blood through a needle - stick or other sharp injuries, mucous and skin lesions. The pathogens of primary concern are the human immunodeficiency virus (HIV), the hepatitis B virus (HBV) and the hepatitis C virus (HCV).

Methods

We analysed all the collected data from the reports of percutaneous injuries, blood and body fluid exposures, and post-exposure questionnaires from all the departments of the hospital during 2009–2010.

Results

During the year 2010, we received 42 percutaneous injury reports (45 reports were included into the study within 2009). The mean age of the medical staff injured was 42.6 years in 2010, 40.0 years in 2009: 22 female cases (52.4%) and 20 male cases (47.6%) in 2010, 31 female cases (68.9%) and 14 male cases (31.1%) in 2009. Most injuries occurred in operating theatres: 32 cases (76.2%) in 2010, 38 cases (84.4%) in 2009. Mostly doctors were injured: 26 cases (62.0%) in 2010, 28 cases (62.1%) in 2009. Most of injuries were caused by a suture needle: 30 cases (85.6%) in 2010, 29 cases (67.4%) in 2009. In 2010, 4 injuries (10%) and 6 injuries (13%) in 2009 were dangerous of HCV.

Conclusions

1. Our data collected during 2009–2010 seem to indicate that the reports received include only a little part of all the injuries.
2. It is necessary to convince employees of the need to report all the needle-stick injuries.
3. We have to educate the health care staff on the risks associated with sharp injuries.

P48

Nosocomial infection surveillance in Intensive Care Units at Vilnius University Hospital Santariskiu Klinikos during 2005-2010

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Introduction

An active nosocomial infection surveillance system was initiated in 2 Intensive care units (ICU) - to observe tendencies of nosocomial infection rates, to determine the nosocomial infections risk factors and to evaluate efficacy of infection control's measures, etc.

Methods

All case histories of patients who were hospitalized in two ICUs: I ICU - general surgery and II ICU – cardiosurgical during 2005-2010 were analysed. Analysis of the data obtained was performed using statistical program EpiData.

Results

The most frequent nosocomial infections in the general surgery ICU were: SSI (surgical site infections) – 14-39 (20.0 - 41.4%) cases, BSI (blood stream infections) – 20–50 (31.1-44.3%) cases, pneumonia – 17–20 (15.4–25.9%) cases, UTI (urinary tract infections) – 15-24 (15.4–25.9%) cases. The most frequent nosocomial infections in the cardiosurgical ICU were: BSI – 13–38 (46.2–62.1 %) cases, pneumonia – 6–10 (17.1– 26.3 %) cases, UTI – 5-13 (15.2–19.2 %) cases. The most frequently isolated pathogens of nosocomial infections in the general surgery ICU were: *Enterococcus* spp., *Pseudomonas aeruginosa*, *Acinetobacter* spp. The most frequently isolated pathogens of nosocomial infections in the cardiosurgical ICU were: *Candida*, *Enterococcus* spp., *Serratia* spp.

Conclusion

We don't observed the significant variations of nosocomial infections rates during 2005-2010, so the represented data are the basic data of ICU nosocomial infections. Annual data analysis shows, that isolated pathogens of the nosocomial infections has tendency

to change, so the special attention must be given to hands, instruments, environment, hygiene, rational use of antibiotics and etc.

P49 Antimicrobial resistance of isolated in nosocomial bloodstream infections: the ten years surveillance in a comprehensive cancer centre

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Introduction

To optimize the empiric treatment of bloodstream infections (BSIs), one of the major life-threatening infection in cancer patients, the knowledge of local trend of antimicrobial resistance is essential. Aim of this study is to assess the ten years local epidemiology of BSIs in a comprehensive cancer centre.

Material and Methods

The results of blood cultures collected from adult inpatients between January 1999 and December 2008 at the European Institute of Oncology were retrospectively analyzed. For each patient one blood culture per febrile/infective episode was studied. Identification methods and susceptibility tests were performed according to standardized laboratory techniques.

Results

Both in oncological and surgical divisions, Gram-positives were responsible for the majority of the 740 infective/febrile episodes occurred. Regarding to the antimicrobial resistance, enterococci (about 4% of isolates) showed an increased resistance to levofloxacin (from 5.6% to 25.7%) and to erythromycin (from 41.7% to 61.4%). Similarly, CoNS (more than 40% of isolates) developed resistance to levofloxacin and to ciprofloxacin (from 33.9% to 67.4% and from 5.6% to 25.7% respectively). The Enterobacteriaceae (about 25% of isolates) showed an increased resistance to gentamicin, although without alarming values (from 1,2% to 9,7%); other trends were not statistically significant, none statistically significant difference of ESBL organisms was observed, *Pseudomonas* species resistance also did not show a statistically significant difference.

Conclusion

Antibiotic resistance of isolates was not a serious concern, probably owing to a careful institutional policy about the antibiotic use both in prophylaxis and in empiric or tailored therapy.

Effectiveness of a strict policy on the perioperative antibiotic prophylaxis: eight years experience in a comprehensive cancer centre P50

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Introduction

An appropriate antibiotic perioperative prophylaxis is essential to reduce the incidence of surgical site infections, with the associated complications, avoiding the development of antimicrobial resistances. Aim of our study is to evaluate the effectiveness of a rigorous policy on the appropriate choice of perioperative prophylaxis.

Methods

In November 2002 the Infections Control Committee of the European Institute of Oncology released new guidelines establishing, for each surgical procedure, the appropriate choice of antibiotic, the way, timing and duration of administration, and the alternative drugs for allergic patients. Meetings with clinicians, to discuss and share the new indications, and training courses for all the healthcare staff were organized, and periodical checks to verify the compliance with these indications were performed. To evaluate the effectiveness of this policy, we compared the adherence to the new guidelines.

Results

Over the years, the ratio of totally correct prophylaxis increased from 39.7%, at the onset of the introduction of the new policy, to 66.4% in November 2003 and 92.8% in November 2010, with a ratio of correct active principle and timing rising respectively from 52.9% to 80.1% and 100% and from 38.2% to 69.4% and 84.8%.

Conclusions

Sharing of perioperative antibiotic policy with the clinicians, and a continuous training, in co-operation with clinicians, microbiologists and pharmacologists, relating the right use of the antimicrobials are fundamental to reach a high compliance in the observation of the newly-introduced specific guidelines.

P51 Antibacterial resistance of Pseudomonas aeruginosa in Elderly Patients

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The problem of the antibacterial resistances in elderly patients is very serious due to their frequent immunodeficiency which doesn't allow mistakes in antibacterial therapy. During the year 2010 we wanted to verify in elderly patients (born before 1945) admitted to the S. Orsola Hospital of Brescia the antibacterial resistances of Psedomonas aeruginosa isolated from biological samples in comparison with bacterial strains isolated in patients born after 1945 year. All clinical samples sent to the Microbiology Laboratory have been sown in Mc Conkey agar plates (Bio Merieux code 43141), and incubated in aerobiosis for 16-18 hour at 36.5°C. The isolated bacterial colonies have been identified and *Pseudomonas aeruginosa* submitted to the antibacterial susceptibility tests by Vitek 32 system (Bio Merieux). The differences in antibacterial resistance between two groups of patients have been statistically evaluated by Fisher and X square test. 89 strains of *Psedomonas aeruginosa* in elderly and 126 in other patients have been isolated. Our study shows a statistically significant higher antibacterial resistance in *Pseudomonas aeruginosa* isolated from elderly patients in 6 (aztreonam, ciprofloxacin, gentamicin, piperacillin, ticarcillin/clavulanate, tobramycin) out of 22 studied antibiotics. The resistance to carbapenems is high in all patients, suggesting the presence of carbapenemase and the need of an accurate microbial diagnosis. Our reports confirm the difficulty of the antibacterial therapy in elderly patients admitted to the hospital and underline the importance of a specific hygienic behaviour to avoid the spread of poliresistant bacteria in Geriatric Department and of a specific antinfective competence in all geriatric physicians.

P52 The surgical site infection in the Florence health company: the adhesion to protocol of the national system of surgical site infections surveillance of CCM

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Introduction

The Florence Health Company has joined the protocol of the National System of Surgical Site Infections (SSIs) Surveillance of CCM. The operation procedures supervised were the colon and small intestine surgery and Caesarean section. Data collection lasted from October 1 to December 31, 2010, with an extension until January 31, 2011 for the follow up.

Content

The study involved 11 wards (8 of surgery, obstetric 3) of the 5 Hospitals of Florence Health Company. The operations that have been supervised are a total of 337: 117 colon surgery, 12 small intestine and 208 cesarean sections. The SSIs were 12, including 11 Superficial Incisional and only one Organ/Space, not Deep SSI, 6 related to the colon surgery, 1 small intestine and 5 Caesarean section. The postoperative hospital days were 15 (5-26) median (interquartile range), while the days between surgery and infection diagnosis were 7 (5.75 - 12) median (interquartile range). 50% of all SSIs were diagnosed during the postdischarge surveillance through Physical examination.

Conclusions

A SSI occurred in 3.5% of patients observed. Have not yet been processed data on perioperative antimicrobial prophylaxis but the main objective of this study was to demonstrate the feasibility of establishing a surveillance system through the collection of comparable data and consistent.

P53 Unusual appearance of *Stenotrophomonas maltophilia* in entubated patients hospitalized in Clinic for anestesiology, reanimation and intensive care) - KARIL Skopje

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Stenotrophomonas maltophilia-associated infection is increasingly recognized as an nosocomial infection which occurs, in immunosuppressed individuals but not exclusively. Many strains of the bacterium manifest resistance to multiple antibiotics.

It is considered an environmental bacterium, although little is known of the epidemiology of *S. maltophilia*, its sources and reservoirs. Even less is known of pathogenic mechanisms and virulence factors and this, reflects over difficulties in distinguishing colonization from true infection, which has fostered the view that the bacterium is essentially non-pathogenic.

This study is generaly case report of unusual isolation of *Stenotrophomonas maltophilia* originated from medical devices (endotracheal tubes) used to support immunosuppressed surgical patients in KARIL and attempt to distinguish colonization from infection.

During our continious monitoring procedure in KARIL, we have isolated 9 multi-drug resistant strains of *Stenotrophomonas maltophilia* (100% resistance to cefixime, ceftriaxone, cefuroxime, cefotaxime, co-amoxiclav, imipenem). Automatic VITEK technique has been used for identification as well as for antibiotik susceptibility testing, to confirm traditional microbiological tecniques (morphology of colonies on blood agar plates and positive oxidase test, disk-difussion method and E-test).

All patients suffered from traumatic haemoragical shock syndrome.

Clinical significance has been confirmed in 2 cases with clinical signs for lower respiratory infection (high body temperatute 38.5°C, and Ro confirmation). These patients have been treated with clindamycin and ceftriaxone with recovering period in 4 days.

Keywords

Stenotrophomonas maltophilia, ICU, clinical significance, endotracheal tube

Improvement of hospital hygiene in Mongolia – the MeshHp project P54

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Mongolia is a central Asian country, 5 times as big as Germany, with a population of 2.6 Mln people and half of them living in the capital Ulaanbaatar. There is a high burden of infectious diseases in Mongolia, especially a high prevalence of hepatitis B and C with consequence of many cases of primary liver cancers. In 2010 joint German-Mongolian project has started (MeshHp) to improve hospital hygiene in some pilot units in Ulaanbaatar. There are selected two pilot hospitals – General Hospital No. 1, Chingeltei District Hospital – and City Emergency Service 103. Many basic problems related to hospital hygiene were identified, for example not adequate microbiology

laboratory capacities, very low vaccination rate of the hospitals´ staff, not adequate reprocessing of medical devices, no availability of alcoholic handrub and a lot of other problems. The presentation is reflecting some information about the project, challenges and some overview of results due to date.

P55 Implementation of an integrated surveillance and control system for *Clostridium difficile* infections

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Background

In our Region, surveillance and infection control practices are implemented by Hospital Hygiene services in hospitals (Hs), and by the Public Health Department in all the other cases, such as communities and long-term facilities (LTFs). Some important problems can be pointed out: firstly, surveillance systems of Hs and LTFs are completely independent, with no communication among them. Secondly, the PHD does not use any Alert organism system and its current systems does not work quickly. Thirdly, the PHD has a good knowhow about surveillance and control of diseases acquired by communities (e.g. measles), while it does not deal with those typical of H or LTFs (e.g. *Clostridium difficile* associated diarrhea- CDAD).

Objective

To control a outbreak of CDAD affecting an H and several LTFs in a district of the Local Health Authority of Reggio Emilia.

Methods

Frequent patient transfers between H and LTFs favoured the spread the outbreak to H and LTFs immediately and simultaneously. Hence, we adopted a new integrated system involving Hospital Hygiene and PHD in order to face this outbreak. It included: the extension of the alert organism system to PHD; the adoption of an integrated system for quick diagnosis and communication, focused on CDAD cases in and out of H; training programs about CDAD control strategies for PHD staff and about CDAD control measures for LTFs' healthcare and cleaning staff.

Results

The new integrated surveillance and control system allowed the avoidance of further secondary cases in LTFs, whereas the impact for H was poor.

Temporal association between increased influenza burden and increased nosocomial antibiotic-resistant organism cases in a teaching hospital P56

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Background

The 2010/11 influenza season resulted in a markedly increased hospitalization rate for influenza cases at Toronto General Hospital (TGH) as compared to previous seasons. An increased number of nosocomially acquired antibiotic-resistant organisms (AROs) was also noted during the late fall and winter of 2010/11. It was hypothesized that the two events may be linked.

Methods

A Laboratory Information System search was conducted for all positive influenza (A and B) and ARO (MRSA, VRE and *C. difficile*) cases between November and January of each of 2009/10 and 2010/11. Infection Control surveillance line lists were reviewed to identify ARO cases that were nosocomial. The seasonal incidence of influenza cases was compared to that of nosocomial ARO cases for both seasons.

Results

There was an anecdotal association between increased inpatient influenza burden and increased nosocomial ARO rates. From November 2010 to January 2011, there were 77 influenza cases and 126 nosocomially acquired AROs, which was far greater than the previous year.

Conclusions

An increase in inpatient influenza cases can be temporally associated with an increase in nosocomial ARO cases at a large teaching hospital. We hypothesize that the increased number of ARO cases was related to: widespread staff febrile respiratory illness with resulting staff shortages; "isolation fatigue" amongst staff resulting in poor compliance with routine practices and additional precautions; lack of isolation rooms; and widespread bed spacing of patients. Subsequently, there has been an increase in environmental services staffing and changes made to policy/practice.

P57 Outbreak of *Burkholderia cepacia* in an intensive care unit: temporal trend, clinical characteristics and outcomes of patients

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Burkholderia cepacia, an environmental microorganism which can be an opportunistic pathogen in patients with cystic fibrosis, is emerging as a causative agent of nosocomial outbreaks involving bloodstream, respiratory tract, and urinary tract infections in intensive care unit (ICU) settings. An outbreak of B. cepacia has recently occurred in ICU at the teaching hospital in Modena (northern Italy). A sudden increase of B. cepacia positive cultures has been highlighted thank to the alert organisms laboratory surveillance activities routinely performed at the structure. The outbreak lasted 18 months and involved 46 patients (25 males and 21 females, mean age 63±18years): 63% of the subjects were colonized and 37% developed an infection (respiratory tract infection). The analysis of spatial and temporal trends of cases together with different environmental investigations and the genotyping of the isolated microorganisms allowed to identify and to remove the source of the outbreak, a contaminated mouthwash for oral hygiene of patients, determining the rapid resolution of the outbreak. A descriptive epidemiological survey of cases has been performed as well, in order to investigate the relationship between host, pathogen and environment and to identify potential predictors to clinical response. Characteristics of infected and colonized patients were compared: no significant differences were found as the two groups showed very really similar demographic and clinical conditions and outcomes (mortality rate: 50% in both groups). Severity of the underlying disease resulted the main factor influencing mortality risk, however it did not appear to be related to the colonized or infected status of patients.

P58 Occult Hepatitis "B" Virus Infection Among Egyptian Blood Donors

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This study was performed in order to evaluate the possible transmission of occult HBV infection (OBI) in blood transfusion.

Materials and Methods

Cross sectional study included 3,167 blood units negative for HBsAg, Anti-HCV & Anti-HIV was performed. Samples were tested for ALT, AST and anti-HBV core antibodies (total). Quantitative HBV

surface antibodies and HBV- DNA by real time PCR were performed for Anticore positive samples. The study also included selected 265 recipients, of them, 34 have been followed up for 3-6 months for detection of HBV infection.

Results

Total anticore was positive in 525/3167(16.6%) of blood units, 64% of them were anti-HBs positive. HBV DNA was quantified in 52/303 (17.2) % of anti-HBc positive blood donors (Viral load range: 5 to 3.5x 105 IU/mL, median: 200IU/mL). Anti-HBc was the only marker in 68.6% of them. Univariate and multivariate logistic analysis showed that age above thirty and marriage were the most significant risk factors for prediction anti-HBc positivity with AOR 1.8(1.4-2.4) and 1.4(1.0-1.9) respectively. Among anti-HBc positive blood units, age below thirty was the most significant risk factor for prediction of HBV-DNA positivity with AOR 3.8 (1.8-7.9). Serological profiles of followed up recipients showed that, all were negative for the studied HBV markers and HBV DNA. Conclusion: Our findings suggest but could not prove that occult HBV infection is transmissible by transfusion. Nucleic acid amplification should be considered as the primary screening method for high risk immunocompromised recipients. Otherwise, HBV anticore screening would possibly eliminate the risk of unsafe blood donation.

Keywords

HBV; Total Anticore; OBI; HBsAg, HBV- DNA.

P59 Infection Control Guidelines for the Morbidly Obese Patient

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Introduction

The increasing percent of Canadian patients who are morbidly obese pose unique infection control (IC) risks in an adult tertiary care centre and patients may act as reservoirs for antimicrobial resistant organisms (AROs). In response to an increase in AROs in this patient population, practical management strategies were devised.

Methodology

A multidisciplinary team was established with expertise from Infection Control, ICU, dietary and skin care teams, and surgical units. A review of literature and existing guidelines for ARO prevention revealed a paucity of information on this topic. The team then developed a list of potential interventions aimed at controlling spread from the source and grouped under the following headings: IC precautions, bowel care, skin care, cleaning, equipment and supply design.

Results

All bariatric patients are managed with Contact Precautions; protocols for moving and mobilizing patients in a safe manner developed; a dietary protocol was devised to manage incontinence; the skin care team created a uniform care schematic, equipment was modified to accommodate unique needs (e.g. improved diaper design, bariatric sling use, more efficient use of covers for equipment), rooms are now cleaned routinely twice daily, and an educational package/protocols developed.

Conclusions

Managing all bariatric patients with Contact Precautions, enhanced cleaning, bowel and skin care protocols have resulted in reduced transmission and improved nursing satisfaction. Suggestions were made to manufacturers of selected products on how to improve their design to enhance bariatric nursing. Care must be taken not to stigmatize patients or their families in the development of protocols.

P60 A new screening medium for detection of carbapenem-resistant Enterobacteriaceae

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Brilliance™ CRE Agar (Thermo Fisher Scientific), a new screening medium for detection of carbapenem-resistant Enterobacteriaceae (CRE) was evaluated alongside BBL™ CHROMagar™ KPC Agar (BD Diagnostic Systems) and MacConkey Agar (Thermo Fisher Scientific) with 1µg/ml imipenem. Forty three CRE, seven carbapenem-resistant nonfermenting organisms (*Acinetobacter*, *Pseudomonas*) and 99 carbapenem-sensitive organisms (including Enterobacteriaceae, *Pseudomonas*, *Acinetobacter*, *Staphylococcus* and *Enterococcus*) were inoculated onto Brilliance CRE Agar, BBL CHROMagar KPC Agar and MacConkey Agar with 1µg/ml imipenem. Plates were incubated at 36±1°C for up to 48 hr. Brilliance CRE Agar was able to detect more CRE than BBL CHROMagar KPC Agar or MacConkey Agar with 1µg/ml imipenem, with an inclusivity of 97.7% after 16 hr. incubation compared to 88.4% and 74.4% respectively. All nonfermenting carbapenem-resistant organisms tested also showed cream or naturally pigmented growth on all three agars. No carbapenem-resistant E. coli tested grew on BBL CHROMagar KPC Agar and MacConkey Agar with 1µg/ml imipenem, even after 48 hr. incubation. Growth of carbapenem-resistant E. coli was observed on Brilliance CRE Agar after 16 hr. incubation. Brilliance CRE Agar and BBL CHROMagar KPC Agar showed comparable exclusivity at 18 hr. (87.9% and 89.9%). Exclusivity of MacConkey Agar with 1µg/ml imipenem was 82.8% at 18 hr. Exclusivity of all media decreased after 48 hr. (83.8% for Brilliance CRE Agar and BBL CHROMagar KPC Agar, 62.6% for MacConkey Agar with 1µg/ml imipenem). Brilliance™ CRE Agar is an effective tool for detecting CRE and other carbapenem-resistant organisms in 16–24 hr. and may allow rapid implementation of infection control measures.

P61 MRSA screening using Brilliance™ MRSA 2 Agar

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A laboratory in the state of North Rhine-Westphalia, Germany, evaluated the performance of Brilliance™ MRSA 2 Agar (Thermo Fisher Scientific) and chromID™ MRSA Agar (bioMérieux) for screening for meticillin-resistant Staphylococcus aureus (MRSA). One thousand and five nasal, perineum or wound swabs and tracheal secretions, collected for routine MRSA screening, were inoculated onto Brilliance MRSA 2 Agar and chromID MRSA Agar. Plates were incubated at 36±1°C for 18 to 24 hr. Presumptive MRSA colonies from either plate were confirmed using a tube coagulase test, automated identification & antimicrobial susceptibility testing and PCR. One hundred and seven confirmed MRSA were isolated on one or both of the chromogenic media. ChromID MRSA Agar showed notable variation in presumptive MRSA colony colour, (from dark to light and transparent green), some of which were confirmed as non-MRSA. In comparison, Brilliance MRSA 2 Agar showed a more consistent blue MRSA colony colour. Sensitivity of Brilliance MRSA 2 Agar (96.3%) was statistically significantly higher (P = 0.04) than chromID MRSA Agar (85.5%). Specificity, positive predictive value (PPV) and negative predictive value (NPV) of Brilliance MRSA 2 Agar (99.8%, 98.1% and 99.6% respectively) were equal to, or higher than, that of chromID MRSA Agar (99.8%, 97.9% and 98.2% respectively). Brilliance MRSA 2 Agar detected considerably more (10) MRSA than chromID MRSA Agar while still showing excellent specificity and NPV. Brilliance MRSA 2 Agar showed a more uniform, distinctively blue MRSA colony colour compared to chromID, making it reliable and straightforward to identify MRSA from patient samples.

P62 Survey of infectious complications and management of CVC in Hemodialysis Units of Florence Health Company

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Context

Central Venous Catheters (CVC) are one of methods of vascular access in hemodialysis patients, where it is not possible to use a native arterio-venous fistula. In September 2010 in Hemodialysis Units of Florence Health Company, 92 (31%) of 296 patients were CVC carriers. Their number is increasing.

Objectives

To detect infectious complications among hemodialysis patients with CVC, to assess antiseptic used, different types and frequency of dressing changes (every 7 days with transparent polyurethane vs each dialysis session with sterile gauze).

Design, Setting and Patients

Observational, prospective study conducted from 01.02.2011 to 31.04.2011 and recruiting patients from 7 Hemodialysis Units in Florence Health Company. Patients were adults CVC carriers, whether permanent or occasional patients.

Results

Of 309 eligible patients, 114 (131 catheters, 3105 dialysis session) could be evaluated. The bloodstream infections were 6 (for 3 BSI the access site was in femoral vein). The insertion site inflammation (score 2 and 3) was present in 57/3070 observations. For skin antisepsis during dressing changes was used chlorhexidine-based solution for 58 CVC, povidone-iodine solution for 39 and sodium hypochlorite for 34. For 88 CVC (67,1%) the sterile gauze dressing was changed each session, for 43 (32,8%) every 7 days with transparent polyurethane.

Conclusions

The data analysis has yet to finish. From the early evidence there are differences in the frequency of dressing: there is exit site inflammation in 54/57 observations in the dressings change each session with sterile gauze, and only 3/57 in the 7 days changed transparent dressings.

P63 A prospective study to determine incidence of ventilator associated pneumonia and antibiotic usage in an adult ICU in a tertiary care hospital in North India

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Ventilator associated pneumonia (VAP) is the commonest nosocomial infection in ICUs in India. To determine the incidence and outcome of VAP in our ICU settings, we carried out a prospective surveillance was conducted over a 19 month period (September 2008 to April 2010). One hundred and eighty six consecutive patients (both medical and surgical) admitted to an adult ICU of our tertiary care referral hospital in North India. The total number of ICU days was 2982 and mechanical ventilation days was 2255. Eighty eight patients developed a total of 125 episodes of VAP (1.42 episodes/patient). The incidence of VAP was 55.43/1000 ventilator days. Early onset VAP (< 5 days of mechanical ventilation) accounted for only 28 episodes, the remaining episodes (95) were late onset VAP. Of the 88 patients who developed VAP, 36 died due to the infection (attributable mortality was 40.9%). The most common etiological organisms were *Acinetobacter* spp (predominantly *Acinetobacter baumannii*) and other gram negative lactose nonfermenting bacilli (60%), followed by *Pseudomonas aeruginosa* (27.2%), enterobacteriaceae (5.6%) and *S. aureus* (4.8%). Late onset VAP was predominantly caused by *Acinetobacter baumannii* (59%) and caused *Pseudomonas aeruginosa* (33%). A total of 402 antibiotics were given to these eighty eight patients (average 4.5 courses per patient/ICU

stay). Antibiotic usage density was calculated to be 2115 DDD/1000 ICU days. We conclude that both the incidence of VAP and the resulting antibiotic density is very high in our setting requiri ng institution of stringent infection control measures.

P64 Compliance and effect of antibiotic prophylaxis at cesarean section in Norway

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Introduction

The Norwegian surveillance system of surgical site infections (NOIS) initiated a survey comprising hospital based guidelines of antibiotic prophylaxis (ABP) during caesarean section (CS). Norwegian guidelines recommend ABP for all acute CS and on indications. Objectives: to explore praxis of ABP regimes and timing of administration in CS relative to local and national guidelines at hospital level.

Methods

All 42 hospitals performing more than 10 CS in 2008 were invited to a survey in 2009 about local guidelines of ABP. Praxis of ABP in relation to local guidelines were evaluated through NOIS-data from 2009. All analyses were done in SPSS with chi-square test.

Results

All invited hospitals responded. 4 hospitals used ABP in all CS, 33 hospitals in all acute CS, 1 hospital on indications. Four hospitals had no guidelines. 19 of 33 hospitals, who had guidelines on ABP at acute CS, practised also prophylaxis on indications in elective CS. 12 of 38 hospitals administered ABP at start of surgery, whereas 26 of 38 practised ABP after clamping. Compliance with guidelines was significantly higher in hospitals that provided prophylaxis in all CS compared to hospitals that practised ABP in acute CS, only.

Conclusions

In line with Cochrane guidelines, 4 hospitals practised ABP in all CS at start of surgery (~ 10% of volume), whereas 33 of 42 practised ABP according to Norwegian guidelines. Surveillance data like NOIS are an important resource for evaluating compliance with guidelines, and possible effects on surgical site infections (SSIs will be presented during presentation).

P65 An "ambulatory" case of mumps in a hospital: logistical challenges in tracking exposed cases

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Introduction

An outbreak of mumps linked to a local resort in British Columbia, Canada resulted in an infectious physician working on multiple floors in a tertiary-care hospital in Vancouver.

Methods

Investigation of exposed patients and health-care workers (HCWs) was undertaken by Infection Control Practitioners (ICPs) and Occupational Health Nurses (OHNs). Medical Microbiologists (MM) provided medical guidance. OHNs reviewed employee data (largely paper-based) for proof of immunity, conducted telephone interviews to document exposure history, and collected serology and administered vaccine as appropriate. Team meetings began midway through the investigation and then daily to ensure that all staff were reviewed before the date(s) when decisions regarding furloughing occurred.

Results

The investigation initially required 2 ICPs and 3 OHNs, however 3 additional OHNs were enlisted to meet furloughing deadlines. All (18) exposed patients were immune. There were 162 staff that needed OHN assessment with 117 (72%) employees requiring a personal interview [48 (40%) of these had no proof of immunity]. Serology was collected for 27 (16%) and MMR administered to 63 (38%) HCWs. Interestingly, 26 (16%) of HCWs fully evaluated were not on the

affected floors. The investigation consumed 199, 34, and 30 hours from OHNs, ICPs, and MMs, respectively and cost $14,550.

Conclusion

Significant workload, communication and financial challenges were encountered during the investigation. The following measures would improve efficiency; 1) early coordination of involved teams, 2) early identification of manpower requirements, 3) stricter exposure definitions, 4) mandatory documentation of HCW immunity, and 5) introduction of a centralized, electronic employee database.

P66 Carbapenems and Enterobacteriaceae

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Carbapenem-resistant Enterobacteriaceae (CRE) are usually resistant to all ß-lactam agents as well as most other classes of antimicrobial agents. CRE cause severe infections among residents of long-term-care facilities. The treatment options for patients infected with CRE are very limited. Tigecycline and polymyxins including colistin have been used with variable success.

Healthcare-associated outbreaks of CRE have been reported. CRE are increasingly recognized as the cause of sporadic and outbreak infections in the U.S.
Aggressive infection-control practices are required in aborting these outbreaks.

Aim and objectives

To implement the new laboratory methodology for antimicrobial susceptibility testing by checking the zone diameter and MIC breakpoints of carbapenems for Enterobacteriaceae (new 2011 CLSI Guideline)
To record the CRE prevalence and implement the infection control practices.

Material and methods /Intervention

The prevalence of CRE was calculated manually for 2009 and 2010 retrospectively. Data records were collected from Vitek 2 and computer Whonet system.
Review the old and new CLSI guidelines.

Results

Carbapenems Resistance Enterobacteriaceae (CRE) isolates are also emerged in our local hospital in 2009 and 2010. The prevalence % of each CRE isolate will be shown with graph in presentation.

Conclusion

Carbapenems Resistance Enterobacteriaceae (CRE) isolates are also emerged in our local hospital. CRE are clearly MDR and infection control measures are recommended. Detection of carbapenemases and implementation of infection control practices are necessary to limit spread.

P67 Infection Control in Chinese Pediatric Hospitals: Site Visits in Chengdu, Shanghai, Fuzhou and Xiamen

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Background

As part of an pediatric infectious disease and infection control mentorship program (administered through the Centre for International Child Health, British Columbia Children's Hospital, Canada) we visited four Chinese hospitals across the country in the spring of 2011 and participated in a national pediatric infectious disease conference in Yangzhou.

Methods

The visits included interviews with hospital administrators, pediatricians, pediatric infectious disease specialists, ICU physicians, as well as medical microbiologists/virologists and infection control practitioners. A working group to discuss "Challenges in Infection Control" was organized at the Yangzhou Conference. Results: Prevention of Hospital Acquired Infections (HAIs) in Chinese hospitals is considered high priority. Measures to combat HAIs include: strict adherence to hand-hygiene practices (e.g. alcohol rub at patient-beds), formal dress-codes (uniforms) and attention to construction issues (e.g. new isolation-units), electronic charting, formal

surveillance protocols. Challenges facing infection control practitioners included the exceptionally large (by North American and European standards) daily patient volumes, lack of single patient rooms, increased presence of AROs, incomplete vaccination coverage, varying levels of diagnostic microbiological services and a patient-pay system for medical care. ARO surveillance programs, now a government requirement, are not always accompanied by adequate funding. Outbreak protocols have increased implementation challenges because of large patient volumes. Leadership's awareness and interest in infection control correlated with enhance infection control practices.

Conclusions

In summary, a strict dress-code, mandatory surveillance and general awareness, supported by physicians, helped to provide improved infection control despite large patient volumes and a significant burden of infectious disease.

P68 HandyAudit – a technology to facilitate more objective, accurate, and consistent Hand Hygiene audit compliance data

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A new type of electronic hand hygiene auditing technology (HandyAudit™) has been developed by researchers at Toronto Rehabilitation Institute in Canada. The technology uses an "evidence-based" approach to reduce subjectivity and to produce consistent and accurate hand hygiene compliance measurements. The Council of Academic Hospitals of Ontario in Canada has chosen to adopt HandyAudit as part of their "Adopting Research to Improve Care" initiative. At the time of this writing, the HandyAudit tool is being used in 16 academic hospitals and is expected to reduce cost and an increase the reliability of hand hygiene auditing. Clinical validation has shown the new system to be equivalent to a correctly administered paper-based tool. This presentation will demonstrate how institutions are using the HandyAudit system to improve clinical feedback and discuss how the technology facilitates more objective, consistent and accurate data. This talk will touch on the potential for HandyAudit to facilitate valid comparisons of hand hygiene compliance - even between institutions using different hand hygiene standards. Disclosure: The presenting author is one of the inventors of HandyAudit, and has founded a spin-off company to commercialize the technology. The spin-off company, HandyMetrics, has received Federal support from the National Research Council Canada's Industrial Research Assistance Program; and provincial support though Ontario Centres of Excellence, VentureLab and MaRS Discovery District.

P69 Incidence of infections associated with perinervous catheter for control of postoperative pain in orthopedic surgery

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A pilot study lasting about 3 months was conducted at the structure of Orthopaedics of a hospital of Friuli Venezia Giulia (Italy). Were observed in 91 patients who were placed perinervous catheter for postoperative pain control, of these, 60.4% are female, with an average age of 67.6 years. The males have an average age of 65.8 years. Almost all cases (86/88) underwent elective surgery. 83.3% (75/90) of subjects underwent surgery on the knee (joint replacement, ligament reconstruction), 6.7% (6 / 90) subjects underwent hip surgery. For most cases, the catheter was anchored to the skin through Lockit fixation device (72.5% [50/69]), and was medicated with plaster porous and bandage (69% [58/84]). The 74.4% (58/78) of the catheters remained in place for a time between 1 and 5 days, 15.4% (12/78) for a time between 6 and 10 days, while 10.3% (8 / 78) remained in place for more than 10 days. The most frequent reason for removal (59% [36/61]) is the end of therapy, following the accidental

dislocation (21.3% [13/61]) and bleeding from the insertion site (13.1% [8 / 61]). They have identified 14 cases of infection of the catheter insertion site among the 91 subjects observed, with a given cumulative incidence of 15.4 infections per 100 patient with perinervous catheter and an incidence density of 27.9 infections per 1000 perinervous catheter days. In 85.7% (12/14) it was a deep infection. 71.4% (10/12) of infections were identified in the first 5 days by the insertion of the catheter.

P70 Reduction of the neutralisation time to 10 seconds during antimicrobial activity testing of disinfectants according to European Standards

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According to European Standards, to stop the disinfectant- microbe contact, the dilution-neutralisation method is applied. The EN neutralisation time is estimated to be 5min+/-10s however, in fact is extended by the time required for neutralisation. Thus, reducing this neutralisation time would enable more precise determination of the real preparation activity. This is particularly important when evaluating preparations, such as hygienic hand disinfection products, for which declared contact times are often very short. The objective of our study was to investigate whether reducing the neutralisation time required following declared product contact times for the tested microorganisms yields more precise method validations. This study was conducted on 13 products containing active substances from different chemical groups. These products were designed for different applications: hygienic and surgical hand disinfection; pre-operative disinfection of patient skin; disinfection of surfaces and medical devices; and for external and uterinal applications in veterinary. This study was conducted according to EN 1040:2005, EN 1275:2005, draft EN 13727:2005 and EN 13624:2003. For tests conducted according to ENs phase 2, step 1 the “dirty conditions” were applied. Validation-C results for all products and tested microbial strains were at least half of the density of the suspension for validation (Nvo) after only 10 s of neutralization. No correlation was observed between neutralisation time (10 s, 1,2,3,4, or 5 min) and the number of recovered microorganisms in validation-C. Concluding, the contact time of investigated EN can be more precisely determined by reducing the neutralisation time from 5 minutes to as short as 10 seconds.

P71 Hepatitis G Virus (HGV): What is the current situation, what should we do and how do we prevent this infection?

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Hepatitis G virus was identified in 1995. Some work was done on HGV until 1997 and FDA (Food & Drug Administration) declared it as a non harmful virus. This resulted in no screening of virus for blood donors & bags from 1997 until today.

Objective

This study was done to find out the prevalence of HGV in blood donors among our population and to review most important articles present in scientific literature for the last 16 years and find out if the standards of the past on HGV are valid in present time or not. If not then we are ignorantly transferring this disease to many blood recipients.

Materials and Methods

In the majority of studies PCR (Polymerase Chain Reaction) was used to identify the virus. In some studies EIA (Enzyme Immuno Assay) techniques were used.

Results

In our study three hundred seventy one (371) blood donors were screened for HGV with 05(1.35%) positive cases. In professional donor’s group out of 173 there were 4 (2.3%) for HGV where as in volunteer donor group only one (0.5%) was positive for HGV out of 198. All were male and highest

positive cases for HGV were in the 50-59 years age group, in professional donors 2 (6.7%) out of 30 in the 50-59 years age group and 1 (2.2%) in volunteer donor group out of 45 in the 40-49 years age group. Results of this review study showed that HGV is quite prevalent around the globe with very low to very high prevalence in different countries among blood donors and other groups. It was found to be associated in acute viral hepatitis, fulminant hepatitis, chronic hepatitis, cirrhosis of the liver and possibly present in hepatocellular carcinoma, alone or as co-infection. It was also seen in hematological disorders and hematological malignancies.

Conclusion

In view of our study and after reviewing the literature of the past 16 years it is advisable that screening of blood is better than transferring HGV ignorantly to blood recipients like it was done in the past, where we did transfer HCV to many individuals who resulted in a lot of morbidities and mortalities. We should review our practice before it is too late. As there is no vaccine available for HGV, infection prevention and control practices are the best solution to this problem.

Key Words

HGV, acute hepatitis, chronic hepatitis, fulminant hepatitis, Hepatocellular Carcinoma, Hematological disorders, Hematological malignancies, PCR, and Genotyping.

P72 Dutch Surveys Bedpan Management (1990 & 2010) Progress in correct use of Washer Disinfectors

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In Holland bedpans are regarded as semi-critical items and decontaminated in washer-disinfectors (WD). A Dutch survey (1990) showed poor cleaning and disinfection results. The Dutch Working Party Infection Prevention made WD guidelines (1995). In 2006 the International Organization for Standardization (ISO) introduced Standard 15883 for WD. Part 3 is intended to be used for emptying, flushing, cleaning and thermal disinfection of bedpans.

Project

In 2010 KNIP consultancy repeated the survey. A survey was sent to Consultants Infection Prevention in 120 hospitals. Questions covered: type of bedpans, methods of emptying and decontamination, awareness and use of national/international WD guidelines and the WD validation and maintenance. Final questions about the role for bedpans or WD in outbreaks.

Results

The response rate in 2010 was 77/120 hospitals (64.1%). Manual emptying, cleaning and disinfection stopped. Maintenance and validation of the WD showed improvements. From the responders 87 % never researched WD or bedpans causing outbreaks. 6.5 % reported bedpans or WD as a particular source with the following Microorganisms: *Clostridium difficile*, Norovirus, *Pseudomonas aeruginosa*, *Salmonella*- and *Acinetobacter* species. Nobody published or wanted to share these events.

Lessons Learned

Validated well maintained WD improves patient safety, and prevent staff from unpleasant jobs. Although bedpans can contain loads of pathogens which can be easily spread and transmit, the majority never searches for (handling) bedpans and poor quality WD as a source for healthcare associated infections. More study is needed for validated data about this risk. National and international guidelines help to improve bedpan management.

Hand hygiene in the Netherlands P73

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Handhygiene in Dutch hospitals was controlled by the head nurses. Since 1967 the Health council advises

handhygiene in the Netherlands to prevent nosocomial infections, (updated 1990). In contrast with the advice the practice was not any longer controlled because leaders promoted: it was every healthcare worker's (HCW's) own responsibility. Handhygiene is always discussed at annual conferences of the Dutch Association of infection prevention in healthcare (VHIG), and consultant's infection prevention introduced handalcohol in hospitals 15 years ago. Alas at conferences for HCW's including physicians, handhygiene is seldom mentioned. Holland was one of the 1st countries who signed the WHO pledge for handhygiene, unfortunately nobody felt responsible to take any action. In 2008 a survey for handhygiene compliance was conducted by the Erasmus university of which the results showed a compliance < 20%. 4 Volunteers from the VHIG and the Dutch Society for Medical Microbiology (NVMM) started in 2009 a working party: ''Take 5''. There goal is a national campaign handhygiene for all healthcare settings, supported by the ministry of health. The inspectorate of health supported the idea from the beginning and placed the theme on the agenda of the Patientsafety conference 2010. This year VHIG and NVMM recognized ''Take 5'' officially and decided to use the WHO's self-assessment as a tool to progress hand hygiene promotion in the Netherlands. Members ''Take 5'' will anonymously evaluate the total national data. These results will be presented to the ministry of health with hopefully action as result.

P74 Surveillance of healthcare-associated infections (HAIs) through the Hospital Information System (HIS) of the Hospital Ordine Mauriziano - Turin, Italy

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Introduction

Health care-associated infections detection has been experimented in Mauriziano Hospital starting from informatic query of microbiological examinations. To realize our project we analyzed all hospital information system (HIS) data about laboratory/ instrumental examinations, surgery, hospital discharge records (HDR).

Objective

To test validity of surveillance of surgical site infections's methodology (SSIs), carried out through HIS.

Methodology

Setting: Cardiac Surgery. Period: July-December 2010. SSIs surveillance was performed by HAI responsible cardiac-surgeon through classic method, and in parallel by Infectious Disease Specialist through the HIS. The case definition was made step by step: starting from diagnosis (obtained by connecting microbiological data with laboratory parameters -as inflammation markers- and some strumental examinations) to arrive at a more detailed result evinced from HDR. We collected through HIS: - socio-demographic data - dates of admission-surgery-discharge - procedures for admission (emergency/programmed) - Euroscore - codes ICD9CM of performed procedures - outcomes. The link with medical records allowed us to detect duration of surgery procedure and to identify first surgeon: those two variables were useful to calculate NNIS index and Standardized Infections Rates/ surgeon.

Results

SSIs rates (detected by two different methods) were comparable (15/225 = 6.6%; NHSN data from 1.84 to 8.49). The reliability of case finding through HIS is therefore confirmed. Principal advantages: less time to be spent on monitoring, possibility of extending surveillance to all Hospital departments with refund of results in real time.

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P75

Prevention, surveillance and infections control in Hemodialysis of Mauriziano Hospital- Turin, Italy

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Introduction

Chronic hemodialysed patients may come into contact with infectious agents more easily than others, especially through vascular access for hemodialysis. Vascular accesses related infections are the most important cause of hospitalization and increased length of stay in those clusters of patients. The catchment area of Mauriziano Hospital Hemodialysis is Turin center population (more than 8,000 performances/year).

Objective

Implementing Deming cycle (PlanDoCheckAct) to reduce risk of dialysis infection related and linked socio-economic effects (hospitalization, increased morbidity/mortality).

Methods

Prevalence of events (hospitalization /intravenous antibiotics /positive blood cultures): number in first two days of each month among patients in Hemodialisys (vascular access type - AVF, GRAFT, TC, NTC/comparison with historical data). Then: - defining control system: operational documentations (protocols, procedures, registration forms, periodic reports), performance indicators, staff training - assessing protocols/procedures adherence through periodic checks: synthesis was shared with involved healthcare workers and lead to amendment/revision of protocols in use.

Conclusions

2009 events rates were increased: therefore AVFs were preferred and great attention was devoted to exit site care. Consequence was infections incidence reduction. It's useful: - implementing surveillance - increasing AVF patients - optimizing vascular accesses management/related infections treatment protocols adherence (choice/time of antibiotic therapy).

P76

Control and implementation of antibiotic appropriateness at Mauriziano Hospital in Turin

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Keywords

Antibiotic, appropriateness, antimicrobial stewardship

Introduction

A nominal therapy form has been filling by clinicians in to get more expensive antibiotics since 2002. These antibiotics are carbapenems, glycopeptodes, linezolid Therapy forms' Incompleteness and the need to improve the appropriateness of antibiotic prescription have prompt to implement a specific programme of interventions

Objective

To implement a evidence-based method to optimize the antibiotic use on grounds of historical data' analysis.

Methods

1. Analysis of 270 forms to point more frequent filling mistakes out
2. Definition of a multidisciplinary group to study a new nominal electronic therapy form and new therapeutic protocols for the most common infections in our hospital
3. Periodic review of these forms by the multidisciplinary group to check completeness and appropriateness
4. Drawing reports up for every medical department
5. Clinical audit with discussion about the results

Results

Critical situations from 271 forms analyzed	%
Pathology	66
Diagnosis of the pathology's type and seat	58
Antibiogram	77
Infectivologic advice (when necessary)	81
Length of treatment	79
Inadequate dosage compared to the infection's type	33
Length of therapy compared to infection's type not evaluable	71
Inadequate empirical choice of treatment	24
Inadequate pathogen-specific therapy	43

Conclusions

A new therapy form has been studied and emanated; it will been using for three months before choosing the definitive electronic form 40 medical protocols have been drawn up about the most common pathologies in our hospital The results will be evaluated in 3-5 months and will be subject of audit : Comparison of the antibiotic utilization (expressed in DDD) through the analisys of nominal forms in the period of time May-Sep 2010 vs May-Sep 2011

P77 Nationwide survey of community-acquired and nosocomial MRSA

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This study is a nationwide survey of all clinical methicillin-resistant *Staphylococcus aureus* (MRSA) isolates, including community-acquired MRSA (CA-MRSA), in Japan. A total of 857 MRSA clinical isolates were collected from the 16 institutions throughout Japan that participated in the survey (2008-2009). The drug susceptibility and staphylococcal cassette chromosome mec (SCCmec) typing and the presence of specific pathogenic genes were evaluated.

The isolates comprised SCCmec type II (73.6%), type IV (20%) and type I (6%). The percentage of SCCmec type IV isolates was significantly higher in outpatients than in inpatients.

Most of the isolated strains were sensitive to vancomycin (VCM, MIC =4 μg/ml), linezolid (LZD, MIC ≤ 4 mg/ml) and teicoplanin (TEIC, MIC ≤ 8 μg/ml). Although most strains were sensitive to VCM, the MIC value of VCM for SCCmec type II strains was higher than that for SCCmec type IV strains. Only 4 (2.3%) out of 171 SCCmec type IV strains were Panton-Valentine leukocidin (lukS/F-PV)-positive. Thus, this result indicates a unique feature of SCCmec type IV strains in Japan. The information in this study is not only important in terms of local public health but will also contribute to an understanding of epidemic clones of CA-MRSA.

P78 Validation of cleaning indicators for healthcare surfaces

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Technology including ATP measurement, Artificial Test Soils (ATS) and other methods are being trialled in order to provide a validated basis for cleaning and hygiene performance standards (Griffiths 2000, Boyce 2009). It is important that measures which provide a numerical reading are appropriately qualified and validated so as to provide a meaningful data set which indicate clearly, accurately and with good repeatability the actual hygiene status of the surface to be examined. We took three commercially available hand held instruments used to measure ATP as an indicator of soiling presence on a surface. We also used two versions of an chemiluminesent Artificial Test Soil (Carling 2006). Each system was subjected to a qualification process for validation as per ISO 13485:2008 and the ICH Guidelines (ICH 2005). Results demonstrated that whilst the ATP units have reasonable performance across a log scale, variability across a narrow range of data is variable and repeatability may be difficult to achieve. This may undermine some publications where interpretation is based on data without linearity within the range of the tests being undertaken. The results highlight the need to thoroughly understand a device prior to purchase and to ensure that readings are interpreted with some care.

P79 The importance of a Practical Zero in Cleaning Performance Indicators

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Cleaning Performance indicators for surface hygiene in health care settings are being frequently relied upon to ensure that cleaning tasks have been successfully and suitably performed. Different systems offer differing characteristics which indicate quite different measures with different cost and methodological implications. Following validation of three commercially available ATP hand held measuring devices, and two forms of a chemiluminesent Artificial Test Soil, we subject the indicators to a range of simulated measurements. We then applied a risk approach to develop a model for the implications of findings arising from the readings obtained. This approach underscores the critical issue of establishing a clear and defined practical zero. The literature has debated a standardised approach for ATP, but this has not been able to be supported with widespread agreement partially due to commerical issues, and partially due to the variations between brands of units. Our work has demonstrated that without a clear and defined practical zero, readings may mislead users into false assumptions on either side (false negatives or false positives). False negatives (surface appears clean but is in fact does not meet the cleanliness specification) will lead to an insufficient grasp of risks of cross infection. False positives (surface is thought to be unclean and additional remediation is applied) will lead to cost duplication and inefficiencies. This poster will outline the processes applied and findings of the model and demonstrate the scientific importance of the establishment of a clear and defined practical zero when using cleaning indicators such as ATP and ATS.

Living with ESBL - a qualitative study P80

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Abstract Extended Spectrum Beta Lactamase (ESBL) is an enzyme which conveys resistance to most betalactam antibiotics. Infections are often difficult to treat due to general multiresistance and hospital care may be necessary even for non-serious infections. The aim of this study was to increase our understanding of how infected individuals perceive their situation as "carriers" of multiresistant gut bacteria. A modified version of Grounded theory was used to analyse seven

open interviews. The analysis resulted in the core category "To be thrown into the scary and unknown without a map and compass". All felt that they had received no or insufficient information from the health care system. There were many unanswered thoughts and reflections once the information had been given. Health care staff were lacking in knowledge and the fears they exhibited, sometimes resulting in the use of extreme hygiene measures, increased the stigma. In order to manage their life situation, it is important that those who has been affected by an ESBL-producing bacteria get a good information from the attending doctor.

Keywords
ESBL, Grounded Theory

P81 The study for the cognition, attitude, and behaviour towards hand hygiene in Taiwan's nursing students

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Background
The nursing students are professional nurses of the future. If they have correct cognition, attitude and behavior (CAB) at the school, they may have right CAB as nurses.

Purpose
The purpose of this study is to understand the educational condition of hand hygiene (HH) and to verify the correlations among CAB at the largest nursing school in Taiwan.

Methods
The participants in this study were 100 nursing students in the 2nd grade with non-hospital internship and 100 nursing students in the fifth-grade with the 34 weeks of the hospital internship. The method carrying out this study was used a survey with self-designed questionnaire (Cronbanch α=0.921).

Results
1. The non-interns felt that one-hour education was not enough either for HH or infection control at school. Interns considered one-hour HH education at the hospital being useful and enough.
2. When we compared non-interns with interns by CAB, we found that only the attitude between two groups was significant different ($P<0.001$). The interns had a better attitude than the non-interns and the interns were higher scores than non-interns in all CAB.
3. The relationship were significantly correlated between cognition and attitude ($r=0.415$, $p<0.01$), between attitude and behaviour. ($r=0.432$, $p<0.01$), and between cognition and behavior ($r=0.337$, $p<0.01$) in all of the participants.
4. The hospital internship was significantly correlated only with attitude ($r=0.328$, $P=0.001$).

Conclusions
1. The HH education was not enough at school for non-interns.
2. Hospital internship may improve CAB.
3. There are interactive correlations among CAB.

Suggestion
Nursing schools should modify the HH education program to improve CAB on nursing students.

Strategy of Minimizing Nosocomial Pandemic (H1N1) 2009 Infections among Health Care Workers through Community Influenza Center and Vaccination in Taipei, Taiwan P82

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Background
The 2009 pandemic H1N1 influenza was first diagnosed in Taiwan in May and began to peak since August. Nosocomial infections among health care workers (HCW) were noted following community

outbreak in mid-August. This study evaluated the effectiveness of HCW protection in Taiwan during the pandemic 2009.

Methods

The strategy of community influenza center (CIC) was implemented since mid-September. For those joined the CIC program, we provided 1. educational program to enhance knowledge, diagnosis and treatment of influenza. 2. infection control measures including installed alcoholic dispensers for hand hygiene facilities. 3. a qualified certification assigned to CIC, and finally health insurance for HCWs of CIC. The pandemic H1N1 2009 vaccination campaign started since 2nd November with HCW targeted as the first priority group.

Results

A total of 34 hospitals and 178 clinics were enrolled as CIC and distributed evenly around Taipei City. For Taipei City Hospital with 6 branches located citywide, there were 3747 HCWs and 70.2% of them received 2009 pandemic H1N1 vaccination. The number of HCW acquired 2009 pandemic H1N1 influenza in Taipei City Hospital declined remarkably post implementation of CIC (17 cases in October, vs 31 in August and 45 in September) and dropped further after vaccination campaign since November. There were no nosocomial infection in HCW of CICs.

Conclusions

The strategy of CIC to triage patients from hospitals into neighboring communities seemed to be effective in protecting HCW from a mild pandemic influenza. The high uptake rate of vaccination can further minimize nosocomial influenza in HCWs.

P83 Implementation of good practices (bundle) for infection prevention through an auto-valuation system.

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Control of health care associated infections (HAI) is one of the most important issues of risk management; a project of infections prevention and control is important to promote safety both in patients and in healthcare workers. We introduced the use of bundle to achieve this goal. Bundle is a selection of a few good practices that, if all used simultaneously, give a sure improvement of outcomes. We introduced bundles for six different issues: prevention of surgical site infections (SSI), prevention of catheter associated urinary tract infections (CAUTI), prevention of ventilator associated pneumonia (VAP), management of peripheral venous catheter (PVC), management and insertion of central venous catheter (CVCm, CVCi). The project was divided in two parts: in the first one we organized some meeting with physicians and nurses to explain the concept of bundles. In the second part we involved ward referents for the clinical risk (WRCR), who are professional healthcare workers that constitute a part of corporate infection risk network within wards. WRCR compiled an auto-valuation check list (using data of clinical records) to verify if practices of bundle were used correctly in their wards. The bundle is considered correct when all its practices are applied in right way. Bundle compliance was: SSI 60.7% (167/275), CAUTI 87.9% (181/206), VAP 22.4% (15/67), PVC 57.6% (223/387), CVCm 45.2% (85/188), CVCi 63.2% (55/87). The aim of this project is to spread the knowledge of good practices through use of bundles and to reduce in this way the incidence of HAI.

P84 A Cluster of MRSA infections in a Vascular Surgery Ward.

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Aims

We investigated a nosocomial outbreak of MRSA infection and colonization in patients and Healthcare Workers (HCW) in a vascular surgery ward

Patients and Methods

The "Azienda Ospedaliero-Universitaria Santa Maria della Misericordia" in Udine is 1100 – bed, first level acute care hospital.

During December 2010 and January 2011 an unusual cluster of MRSA isolates was detected with rapid sentinel/alert surveillance system in vascular surgery ward (15 bed).

Positive cultures of MRSA from surgical wounds and other biological materials were obtained from 5 inpatients. Previously in November we found a positive colture of MRSA in another inpatient.

Control measure to prevent MRSA transmission were suddenly applied and nasal swabs were obtained from HCWs. One of these was positive to MRSA.

All MRSA strains show mecA mediated meticillin-resistance and MLSb fenotype.

We decide to type the strains in order to confirm the outbreak and demonstrate the transmission of the pathogen.

Results

Two different MRSA strains were found from 6 patients and one HCW. Clone A was isolated at the beginning from a chronic vasculopatic patient that was hospitalized for the first time in August 2010 and then repeatedly until December. The patient and his relatives were not compliant with standard precautions. Other three chronic patients and one HCW became positive to Clone A from November and January. Clone B was isolated from two chronic patients both hospitalized in January.

Discussion

The result confirm the nosocomial outbreak and the elevated spread ability of MRSA.

Conclusion

Basic infection control practices are key to the prevention and control of MRSA in healthcare settings. Compliance keeping is overriding to prevent MRSA infections and the spread of MRSA.