

Cost and Infection Control Implications of Inappropriate Urine Bacterial Cultures

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Hypothesis: Urine culture in unselected individuals with negative urine dipstick is unwarranted. Physicians often order urine cultures inappropriately, resulting in false positive cultures and unnecessary antimicrobial use.

Methods: Retrospective review of patients who had positive urine culture despite negative dipstick from Jan-Mar 2006. Data were collected on patient demographics, past medical history, presence of urinary symptoms, and documentation of request and results of urinalysis, urine culture and treatment given

Results: 4977 urine specimens were received of which 1570 (31.5%) were negative on dipstick but processed for culture by order of the physician. 113 (7.2%) of these resulted in a positive urine culture. Ninety-seven charts were available for review. The mean age was 28 (median 25, range 1–87). Suspected urinary tract infection was listed as a reason for culture in 45/97 (46.4%) patients. Only 18/68 (26.5%) had urinary symptoms (excluding 29 preschool aged children). The order for urine culture was not recorded in 37/97 (38%) and result was not documented in 64/97 (66%) of patients. 29/97 (30%) received antibiotics for a total of 285 DDD (Defined Daily Doses) (average 9.8 DDD/patient). A total of 254 DDD of antibiotics were prescribed for which no clear indication could be established from the medical record. Estimated excess material cost to the microbiology laboratory in absence of sieving strategy for urine culture was estimated at \$1030/month.

Conclusions: We found poor documentation of reasons for urine culture and results by physicians. In addition, in a majority of cases no clear reason could be found for dispensation of antibiotics other than a positive urine culture. Introduction of positive urine dipstick as a sieving strategy for urine culture in low risk patients would reduce inappropriate antibiotic use and lower laboratory costs.

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Molecular and Phenotypic Characterization of Metallo-Betalactamases Producing Bacteria in a Tertiary Care Hospital

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An ongoing outbreak of bla IMP-4 positive Gram negative rods in the Neonatal intensive care unit prompted us to look at improved screening for these organisms using a mix of phenotypic and molecular methods. These organisms present a challenge to the routine microbiology laboratory because of variable phenotypic expression, the range of organisms involved and the need for rapid results. As this genetic element is relatively new a greater understanding

A total of 300 none duplicate consecutive gram negative clinical isolates were recovered from the department of Microbiology, Nepean hospital, Western Sydney were selected for the study. The 300 isolates comprised of 100 isolates sensitive to third generation cephalosporines and aminoglycosides, 100 isolates resistant to either or both of the drugs and 100 isolates collected from Neonatal intensive care unit where it was thought an ongoing outbreak of MBL positive bacteria was occurring. Historical specimens from early in the outbreak were reviewed.

The bacterial isolates were identified to the species level and antibiotic susceptibility testing as performed by Vitek 1 system (Biomeroix). Isolates were subjected to phenotypic testing using MBL inhibitors, 2-mercaptopropionic acid and EDTA.

The real time PCR was performed using Corbett rotor gene 3000. The primers were designed by primer 3 software targeting the IMP4 gene in order to shorten the product size and make the detection by Syber green a possibility. The expected size of the amplicon was 192 bp. Product specificity was assessed by the melt curve and confirmed by product sequencing. Bla IMP-4 was found to be present in up to 40% of our neonatal screening isolates but was not found frequently in specimens from patients outside the unit. We discuss a suggested approach to screening for IMP4 metallo-beta-lactamases in a hospital setting.

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Enterococcus Infections: Epidemiology, Mortality and Risk Factors in a Regional Hospital in Greece

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Background: Enterococci are an important source of infection in hospitalized patients, especially in elderly individuals with several comorbidities.

Objective: To study the epidemiology and resistance of enterococcus strains that were isolated from inpatients at the Department of Internal Medicine, Argos General Hospital, Argolis, Greece.

Material-methods: During the period from 23/11/04 to 21/10/07 a total of 24 different strains were isolated from urine, blood and sputum samples from 22 patients. Identification and susceptibility testing was performed using the BacT/ALERT analyzer and the VITEK 2 compact automated (MIC) system, BioMerieux. RESULTS Fourteen (58,3%) of these strains were identified as *E. faecalis* and 10 (41,7%) as *E. faecium*. Ten (45,5%) of the patients were men and 12 (54,5%) women. Their mean age was 81,6 years old (range 63–87). The mean length of their hospital stay was 14,3 days. Their mortality rate was 27% (6 patients). Almost 82% of the patients had at least one risk factor for enterococcus infection: 13 (59%) had an indwelling urinary catheter, 10 (45,5%) had received antibiotic treatment for >7 days, 9 (40,9%) were immunocompromised (malignancy, neutropenia, corticosteroid use etc). Bacterial antibiotic resistance

is presented in Table 1. There were no cases of vancomycin-resistant enterococcus (VRE) in 2005, one case in 2006 and three in 2007.

Conclusions: Resistance to vancomycin in our hospital was slightly lower than that seen in the whole of Greece (0 vs 5,2% for *E. faecalis* and 40% vs 42,5% for *E. faecium*), but seems to be rising. Linezolid continues to be an effective treatment for VRE. The possibility of enterococcus infection should be considered in the management of every patient with relevant risk factors.

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Catheter Related Blood Stream Infection - Affecting Factors

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Background: Increased incidence of CRBSI was observed at our interdisciplinary ICU in 4th quarter 2006 (group 1). To identify and avoid affecting factors, we initiated an open prospective comparative study in 3 consecutive quarters of 2007. Obtained data were compared with group 1. The aim of the study was to assess, whether the type of used central venous catheter (CVC), kind of disinfectant and technique of cannulation can influence incidence of CRBSI.

Methods: All patients having CVC in these periods were included to the study. Disinfectant with PVP-iodine used in the group 1 was replaced by 2% chlorhexidine in ethanol in all consecutive groups. The coated catheters (chlorhexidine acetate + silver sulfadiazine) were used in the 1st quarter 2007 (group 2), identical catheters and coated catheters (polyurethane with biquanide) were used in the 2nd quarter 2007 (group 3), the both coated kinds were used together with non-coated catheters in the 3rd quarter 2007 (group 4) like in the group 1. The technique of cannulation was under strict supervision in groups 2 and 3. Total number of involved patients in 4 groups was 274. There is no statistical difference among groups characteristics (number of patients, age, APACHE II, SOFA, LOS, catheter days). Catheters were removed due to positive blood cultures or general or local signs of infection. Removed catheters were cultivated by Maki's method.

Results: We observed statistically significant decrease of CRBSI incidence in groups 2, 3 and 4. Chlorhexidine was used in all these groups. The cannulation supervision was done in groups 2 and 3 only.

Conclusion: In our study Chlorhexidine used as a disinfectant is responsible for decreased incidence of CRBSI and more precise technique of central venous cannulation plays a role. Unlike other studies, type of CVC (coated vs non-coated) was not found as important factor for CRBSI.

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Five Cases of Nosocomial Antibiotic-Associated Diarrhea Due to MRSA (Methicillin-Resistant *Staphylococcus aureus*) at a VA Hospital in the USA

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Background: Most nosocomial antibiotic-associated diarrhea cases associated with MRSA reported are from Japan, and this entity is rarely documented in North America. We report five cases of nosocomial antibiotic-associated diarrhea caused by MRSA at a Veterans Affairs (VA) Medical Center in North Dakota, USA.

Methods: We conducted a chart review and data analysis of five hospitalized patients with MRSA-associated diarrhea from March 2002 to January 2008. We abstracted the data from electronic medical records and laboratory reports.

Results: The stools of all five patients were watery with a heavy growth or pure culture of MRSA. The stools all tested negative for *Clostridium difficile* toxin A/B, enteric bacterial pathogens, or ova/parasites. Four patients' diarrhea resolved rapidly after starting oral vancomycin. One patient's (case 1) diarrhea subsided slowly without taking oral vancomycin. All patients were discharged home following subsidence of the MRSA-associated diarrhea. Characteristics of the five cases of MRSA-associated diarrhea are shown in the following table.

Conclusion: Should a hospitalized patient exposed to antibiotics develop watery, green stools, suspicion of MRSA-associated diarrhea should be high and stool sent for culture to rule out MRSA. Even before the stool culture results are known, we suggest starting oral vancomycin empirically if diarrhea is severe or life threatening.

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Handwashing Behaviors in Rural Bangladesh

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Background: Diarrhea and pneumonia account for 36% of under-five mortality in Bangladesh. Regular handwashing with soap can reduce both diarrhea and pneumonia. We observed the proportion of persons who washed their hands, compared this to the proportion who reported washing their hands and explored the difference in handwashing behavior by socioeconomic group.

Methods: The study was conducted in 100 randomly selected communities in 34 out of 64 districts in rural Bangladesh. Trained data collectors performed 5-hour structured observations of handwashing behavior in 1000 sampled households. They noted handwashing behavior at key times, i.e. before preparing food, before eating, after defecating and after cleaning a child's anus. Two months later, field workers conducted survey that included questions on handwashing behavior in these same 1000 households, and an additional 700 neighboring households. Socio-economic sta-