

**Methods:** First, we compared the detection threshold and the ease of use of GBSDA with LIM-BAP by inoculating known numbers of GBS mixed with approximately  $10^7$  colony-forming units (cfu)/mL of other bacteria (*E. faecalis* ATCC 29212, *S. epidermidis* ATCC 12228, *P. mirabilis* ATCC 7002 and a clinical isolate of *Lactobacillus* sp.). Second, we tested the production of carotenoid pigment in 159 GBS blood culture isolates. Finally, we compared GBSDA, LIM broth with direct GBS antigen detection (LIM-AG) and LIM-BAP as methods for GBS screening in pregnant women presenting in labour to the delivery room. Suspect colonies were identified as GBS by a commercial agglutination test. Identification of non-haemolytic GBS included a positive CAMP test and failure to hydrolyse esculin on bile-esculin agar.

**Results:** GBS colonies were easily detected on GBSDA (figure) at a threshold of 2000 cfu/mL in a mixed culture. In contrast, GBS was not detected in a mixed culture on BAP subcultured from LIM broth with initial inocula of up to  $10^4$  cfu/mL. Orange pigment was produced in 149 of 159 GBS blood culture isolates, including one non-haemolytic isolate. Pigment was not produced in 8 non-haemolytic and 2 haemolytic strains. GBS was detected by GBSDA in 49 out of 226 women (21.6%) but in only 42 (18.5%) and 36 (16%,  $p < 0.05$ ) women by using LIM-BAP and LIM-AG, respectively.

**Conclusion:** GBSDA was faster, easier to use and more sensitive for the detection of GBS from vaginal swabs, compared with LIM-BAP. Although non-haemolytic strains are usually missed by this method, it appears that enrichment in LIM broth offers no advantage for detection of these strains. Therefore, GBSDA may be the culture method of choice for GBS screening in pregnant women.



#### **R2220** Evaluation of a new rapid method for microbial growth analysis and antimicrobial susceptibility test in human biological fluids

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**Objectives:** The Uro-Quick system is an automated rapid method for bacteriuria screening which uses laser nephelometry to detect bacterial growth. We evaluated the Uro4 HB&L system for a rapid micro organisms detection and antimicrobial susceptibility test (AST) directly performed on human biological fluids.

**Methods:** 233 human biological samples counting respiratory (36%), articular, peritoneal and other drainages (64%), were analysed for culture with Uro-4 system. Gram stain microscopy and plate subculture analysis was performed on every sample analysed with Uro-4 after 6 hours incubation. Sixty-nine samples (57 mono and 12 polymicrobial) detected positive by Uro-4 were then processed for a direct AST (3 hours incubation). Four different antimicrobial panels were designed for Enterobacteriaceae, *Streptococcus*, *Staphylococcus* and non fermenting Gram negatives. Culture and AST performed on Uro-4 were compared with traditional culture methods on agar plates and with VITEK 2 system for AST.

**Results:** 136 samples were concordant positive. Microbial growth analysis performed on Uro-4 showed 94.4% sensitivity and 93.3% specificity compared with the traditional culture method. Uro-4 test coupled with Gram stain microscopy after incubation gave 100% sensitivity. Positive counted monomicrobial samples (76%), including 69% Gram positive bacteria, 24% Gram negative and 7% yeast, and polymicrobial samples (24%). Direct AST performed on 26 monomicrobial Gram positive cultures resulted in 95% agreement with the reference method (*Streptococcus/Enterococcus* panel 100%, *Staphylococcus* 92.4%) meanwhile AST conducted on 31 monomicrobial Gram negative samples revealed a 96% agreement (Enterobacteriaceae 94.9%, non fermenting 97.3%). No very major error (sensible vs. resistant) was detected. Polymicrobial samples gave discordant results by reason of the variable composition of the mixture and the small number of analysis.

**Conclusion:** Uro-4 is able to perform bacterial growth analysis and a subsequent AST within 7–9 hours, with a great saving of time respect to the traditional cultural and AST methods. The system revealed optimal performance on microbial agents detection when coupled with Gram stain analysis. The Uro-4 AST showed an high level agreement with the reference method when the test was conducted on mono microbial samples. Further investigations are pending for polymicrobial samples.

#### **R2221** Comparison of MacConkey agar with ceftazidime and CAURI agar for isolation of strains with extended-spectrum $\beta$ -lactamases

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**Objectives:** MacConkey agar with ceftazidime (CMAC) was used in several published studies for isolation of strains with extended-spectrum  $\beta$ -lactamases (ESBL) from faeces. We formulated new agar for the same purpose: CAURI. Objective of the study was to compare both agars.

**Methods:** Media: CMAC agar was MacConkey agar (Biokar) with ceftazidime (1 mg/L); CAURI agar was Uriselect 4<sup>®</sup> agar (Biorad) with ceftazidime (1 mg/L) and ampicillin (10 mg/L). Specimens: during an ESBL outbreak we screened 39 specimens from patients for presence of ESBL strains in faeces. Each faeces was inoculated on CMAC and CAURI agar. Isolates were identified by standard methods, presence of ESBL was determined by CLSI method (cefotaxime and ceftazidime disks with and without clavulanic acid). Sensitivity of each agar was determined by dividing number of ESBL isolates on each agar with number of ESBL isolates on any agar. Sensitivities of CMAC and CAURI were compared (chi-square test, statistical significance:  $p < 0.05$ ).

**Results:** Twenty ESBL isolates were isolated from 14 specimens; two different ESBL species from one specimen were isolated from 6 specimens. Identification of ESBL isolates: 12 *Escherichia coli*, 7 *Klebsiella pneumoniae*, and 1 *Klebsiella oxytoca*. Number of ESBL isolates on CMAC: 17 out of 20 (sensitivity 0.85). Number of ESBL isolates on CAURI: 19 out of 20 (sensitivity 0.95). Difference in sensitivity was not significant ( $p = 0.3$ ).

**Conclusion:** Compared to CMAC, sensitivity of CAURI was not statistically different, but only twenty isolates in specific epidemiological circumstances were studied. Further studies are necessary to determine possible role of CAURI in detection of ESBL carriers in faeces.

#### **R2222** Serologic diagnosis of human brucellosis using Wright, Rose Bengal, Brucellacapt and Elisa tests in a nonendemic area in Greece

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Brucellosis is a widespread zoonosis of great public health importance and economic significance, especially in countries around the Mediterranean basin. Because clinical findings are usually non-specific and blood cultures' sensitivity is low depending on the disease stage, diagnosis is principally based on specific antibodies detection. The

aim of this study was to compare the results of Rose Bengal test (RB), Wright seroagglutination test, an immunocapture-agglutination test (Brucellacapt) and an enzyme-linked immunosorbent assay IgG and IgM against smooth lipopolysaccharide from *Brucella melitensis* 16M in patients with suspected brucellosis. A total of 606 patients were examined by RB and Wright tests in the General University Hospital "Attikon" (which serves the west area of Attiki with a population of 600,000) from February 2004 to November 2006. Thirty-two of them had positive RB and/or Wright tests (5.3%). Brucellacapt and Elisa tests were performed in 19 out of 32 patients. All patient sera were positive in the Brucellacapt test, while 8 sera had negative either RB or Wright test results. Fourteen patients (11/19, 57.6%) had a Brucellacapt titer >1/640, while only 3 patients had a Wright test titer >1/640 (3/19, 15.8%). No prozone phenomenon was observed in the samples. As regard Elisa test results, 14 patients had positive IgG antibodies and 6 IgM antibodies. So, in our territory with low endemicity of human brucellosis, RB and Wright tests were still efficient methods for serological diagnosis of the disease, while Brucellacapt test was appeared to be an effective method, increasing the chance of brucellosis diagnosis.

**R2223** Comparative study of the instrument robustness of automated blood culture devices: BD BacTec™ versus bioMérieux BacT/Alert™

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Instrument robustness of the Becton Dickinson (Sparks, MD) BACTEC™ and the bioMérieux (Durham, NC) BacT/Alert™ automated blood culture devices was assessed by interviewing 278 laboratory managers and senior lab technicians in 5 European countries over a period of less than one month. The main question was "When was the last time you had to call the company for a repair or technical problem (not including normal maintenance)". 101 or 36.3% of the interviewees reported at least one technical intervention since the year of installation of their device. Specific attention was paid to comparability of the test population for both systems. Based on these data it can be concluded that the BacT/Alert™ device requires significantly more interventions than the BD BACTEC™ device. Also the time since last call to the supplier for a technical intervention was significantly shorter for the BacT/Alert™ device than for the BACTEC™ device. When intervention was needed the BacT/Alert™ device was "completely down" just as much times as the BACTEC™ device. The most common problems with automated blood culture devices are hardware related. However, these problems have little impact on patient care because of the availability of back-up and data-retrieval systems.

## Methods for antibacterial susceptibility testing

**R2224** Are susceptibility testing results for clindamycin from microdilution automated systems reliable for therapeutic decisions?

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**Objectives:** Clindamycin has long been an option for treating both, methicillin-susceptible (MSSA) and methicillin-resistant (MRSA) *S. aureus* infections, particularly skin and soft tissue infections. Missidentification of inducible MLSB resistance may lead to clinical failure of clindamycin therapy. We studied the prevalence of MLSBi in community- and hospital-associated *S. aureus* isolates, including MRSA and MSSA, at our institution.

**Methods:** We prospectively collected sequential nonduplicate *S. aureus* isolates exhibiting erythromycin resistance and clindamycin susceptibility, as determined by broth microdilution using an automated system (VITEK System, bioMérieux, France) from April to November 2006. Testing for MLSBi was accomplished by the agar diffusion (D test)

method in accordance with the recommendations of the Clinical and Laboratory Standards Institute (CLSI).

**Results:** Among 63 *S. aureus* isolates, the overall prevalence of MLSBi was 77.8%, with 75% of MRSA and % 78 of MSSA isolates exhibiting MLSBi. CA-MRSA was not found. Prevalence of MLSBi hospital associated MRSA was 83.3%. CA-MSSA has a lower prevalence of MLSBi than hospital associated MSSA (72.4% versus 83.3%).

**Conclusions:** Susceptibility results for clindamycin using methods that do not detect induced resistance are not reliable in order to avoid clinical failures in patient who receive clindamycin for *S. aureus* infections with MLSBi.

## Public health and community-acquired infections

**R2225** Cost analysis on common cold adult patients treated by private general practitioners in Sri Serdang, Malaysia in April 2005

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**Background:** Though common cold mortality is not of great concern, its morbidity is enormous in terms of economic loss due to missed days from school and work. \$40 billion was spent on its treatment and lost of work hours yearly in the USA. In Malaysia, the quantum cost of common cold is not known.

**Objective:** To estimate the average cost of its treatment in a locality and eventually, postulate the total cost in Malaysia.

**Methods:** This was a clinic-based, cross-sectional study. Data was obtained through face-to-face interview at four private general practitioner clinics in Sri Serdang, Selangor in April 2005. The clinics and patients were selected by using convenient sampling method and universal sampling method respectively.

**Results:** A total number of 222 adult patients were recruited. Majority (48.6%) are in the 20–29 years old age group. Male slightly predominated female (52.3% and 47.7% respectively). The Malay ethnic group accounted for the highest number of respondents (81.5%). Majority had tertiary education (51.0%) and within income range of RM 1,000.00–2,000.00 (US\$260–520) (45%). The incidence of adult patients who were treated with common cold at private clinics in Sri Serdang is 4.92%. The average direct cost per patient was estimated to be RM 39.82 (US\$10.48). The average total cost per patient was RM 116.39 (US\$30.63) per consultation. Based on information from the Ministry of Health Malaysia, the total cost for common cold among adults in Malaysia was estimated about RM 250,921,809.40 (US\$66,032,055.10) a year.

**Conclusion:** This study indicates that the economic impact of common cold in Malaysia is also huge albeit done in a small scale. This study provides a preliminary estimate and hence, future research is needed to obtain a more precise economic burden of common cold in the country.

**R2226** Microorganisms prevalence in urethritis in primary attendance

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**Objective:** Urethritis is the most frequent sexually transmitted disease syndrom. The aim of this study is to know the prevalence and tendency of microorganisms producing urethritis in primary attendance.

**Methods:** Cross-sectional study. It is studied the urethral exudate of 1371 patients, 1248 men and 123 women, for 3 years (January 2003–December 2005). The samples were studied for: GRAM stain, culture in habitual plates, *Chlamydia trachomatis* detection by immunocromatography method CHLAMY-CHECK-1 (GRIFOLS) and *U. urealyticum* and *M. hominis* by Mycoplasma IST2 method (bioMérieux).

**Results:** The percentage of positive samples was 36.98%. The isolated microorganisms were: *N. gonorrhoeae* 6.56%, *U. urealyticum* 13.42%, *M. hominis* 1.68%, *Chlamydia trachomatis* 4.45%, *H. parainfluenzae*