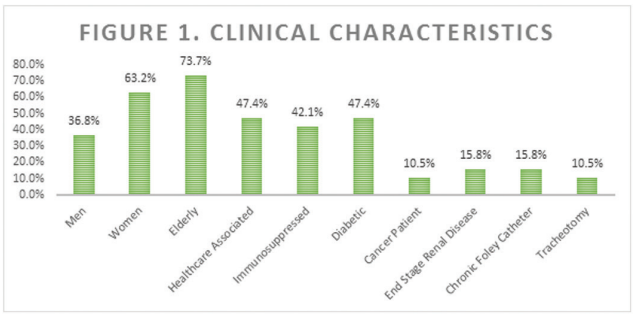
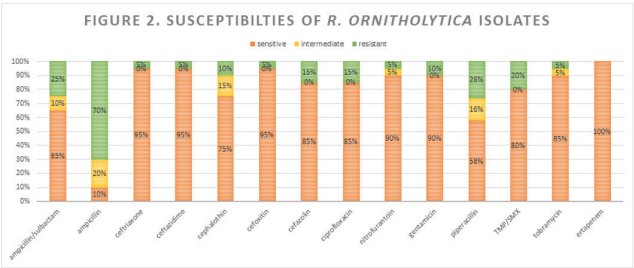
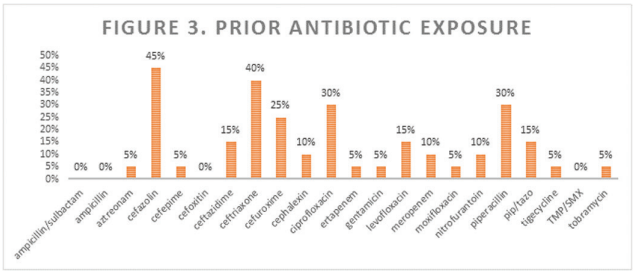
Methods. Cultures positive for *R. ornitholytica* were identified through DRMC's electronic medical records (EMR) from 1/2010 to 3/2017. Site of infection, concurrent infections, isolate susceptibilities, prior antibiotic exposure, and appropriateness of treatment were extracted from the EMR. *Healthcare associated* was defined as occurring in the hospital, nursing home, long-term acute care, or inpatient rehabilitation facility within the past 90 days. Those with diabetes, cancer, and end stage renal disease (ESRD) were qualified as immunosuppressed.

Results. Thirty-two cases were isolated, of which 20 had associated clinical data. One urine isolate was consistent with colonization. Of the 19 infections, the majority (n = 15) were urinary tract infections (UTIs) and one case each from bronchial washing, heel wound, blood culture, and vulvar lesion. Clinical demographics are shown in Figure 1. Thirteen (65%) had concurrent infections, of which 5 (26%) were co-infected with *Enterococcus faecalis*, one which was vancomycin resistant. Three had chronic Foley catheters, constituting 20% of the UTIs. Susceptibilities are reported in Figure 2. Prior antibiotic use is shown in Figure 3.

Conclusion. Most of the isolates from our institution were relatively sensitive, with most resistance to ampicillin. Two isolates were pansensitive, however one case was sensitive only to nitrofurantoin and ertapenem. All isolates which were resistant to cefazolin and ceftriaxone had prior exposure. The elderly and diabetics had the greatest association with infection. A majority of patients had a concurrent infection, which may suggest this as an opportunistic organism. Our findings warrant further studies to better characterize clinical associations and development of resistance in response to prior antibiotic exposure.







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1145. Are Urinalyses Used Inappropriately in the Diagnosis of Urinary Tract Infections?

Ghada Elshimy, MD; Vincent Mariano, MD; Christina Mariyam Joy, MD; Parminder Kaur, MD and Monisha Singhal, MD; Internal Medicine, St Joseph Regional Medical Center/New York Medical College, Paterson, New Jersey

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Background. One of the most readily available and cost effective tests in the diagnosis of urinary tract infections (UTI) is the urinalysis. Problems arise when antibiotic treatment is initiated in a patient who does not display typical signs and symptoms of UTI and for whom a urinalysis was obtained for other reasons.

Methods. This was a retrospective observational study carried out on 1000 patients with positive urine nitrite. Medical records were identified with subsequent analysis of urine culture and symptomatology. Recorded and analyzed data included: age, sex, location (emergency room (ER) or hospital ward), findings on urinalysis (pH, presence of leukocyte esterase(LE), epithelial cells, bacteria, and white blood cells (WBCs)) and antibiotic treatment.

Results. Of these 1000 patients with positive nitrite, we excluded 815 patients (81 had missing data, 466 met exclusion criteria and 268 had symptomatic UTI). 185 were found to not have any symptoms of a UTI. Inappropriate antibiotic treatment occurred in 108/185 patients (58.4%) and was significantly associated with greater amounts of bacteria and WBCs in the urinalyses (P = 0.008 and P = 0.029, respectively). It was also significantly more likely to occur in the ER than the hospital wards (92/147 treated in the ER vs. 16/37 treated on the hospital wards, P = 0.033). There was no significant association between antibiotic treatment and age, sex, urine pH, urine LE, and urine epithelial cell amounts (P > 0.05). Urine cultures were not obtained in 69.7% of patients. A positive urine culture was significantly associated with inappropriate antibiotic treatment (P = 0.0006). The two most common presenting complaints were psychiatric complaints (21.6%) and vaginal bleeding (14.6%).

Conclusion. Urinalysis can be an invaluable diagnostic tool, but must be used and interpreted appropriately. There is a misperception that pyuria with bacteriuria defines UTI. However, positive results on a urinalysis alone in an asymptomatic patient is not enough to diagnose a UTI, and antibiotic treatment is only indicated in specific circumstances as outlined by IDSA guidelines for the treatment of asymptomatic bacteriuria. Further education targeting appropriate interpretation of urinalyses and IDSA guidelines is needed to decrease the unnecessary use of antibiotics.

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1146. Antibiotic Prescription Practice for Pediatric Urinary Tract Infection in a Tertiary Center

Mohammad Alghounaim, MD, FAAP, FRCPC[1]; Olivia Ostrow, MD[2]; Kathryn Timberlake, PharmD[3]; Susan E. Richardson, MD, CM[4] and Michelle Science, MD, MSc[5]; [1]Department of Pediatrics, McGill University Health center, Montreal, QC, Canada, [2]Hospital of Sick Children. University of Toronto, Toronto, ON, Canada, [3]Department of Pharmacy, The Hospital for Sick Children, Toronto, ON, Canada, [4]Division of Microbiology, Department of Pediatric Laboratory Medicine, The Hospital for Sick Children, University of Toronto, Toronto, ON, Canada, [5]The Hospital for Sick Children, Toronto, ON, Canada

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Background. Urinary tract infection (UTI) is a leading cause for acute care visits in pediatrics. A suspected UTI diagnosis is made based on typical clinical presentation and pyuria and confirmed by significant growth in an appropriate urine sample. Prescribing antibiotics for suspected UTI is a common practice, and may lead to unnecessary antibiotic exposure. We aimed to review the practice of UTI diagnosis and management in the Emergency Department (ED) to identify targets to improve antimicrobial prescribing practices.

Methods. Children (< 18 years) who were discharged from the ED at the Hospital for Sick Children with a diagnosis of UTI between October to December 2016 were included. Patients were excluded if they were (1) under 12 weeks of age, (2) had underlying genitourinary abnormalities, (3) were admitted or transferred to another center, (4) were on antibiotics on presentation, (5) had urine testing done in another laboratory, or (6) were given conditional prescription. Demographic, clinical history, laboratory findings, and urine culture results were collected from patient charts. The sensitivity and specificity of nitrite and leukocyte esterase (LE) for UTI diagnosis were calculated. Logistic regression was used to examine the relationship between urinalysis characteristics and confirmed UTI.

Results. A total of 186 children with a median age of 4.2 (IQR 1.2, 7.3) were included; 82.3% were female. Almost all children were discharged home on antibiotics (n = 183, 98%) for a median duration of 7 days (IQR 7, 10). A total of 87 patients (46.8%) received antibiotics despite negative urine cultures and none of these patients received notification to stop. This led to 652 unnecessary antibiotic days. The presence of nitrites was the strongest predictor of UTI (OR 13.3, P < 0.001) and was highly specific. An LE result of 2+ (OR 2.4, P = 0.04) or 3+ (OR 2.23, P = 0.016) was also predictive of UTI.

Conclusion. Current practice in managing suspected pediatric UTIs in our ED resulted in significant and unnecessary antibiotic exposure. We identified targets to reduce unnecessary antibiotic exposure including improving the diagnostic accuracy of UTIs, a process to discontinue antibiotics for negative cultures and standardizing antimicrobial duration.

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1147. Comparison of Inflammatory Markers Between Adult and Pediatric Brucellosis Patients

Recep Tekin, Associate Professor[1]; Fesih Aktar, MD[2] and Celal Ayaz, Prof[3]; [1]Infectious Diseases and Clinical Microbiology Clinic, Diyarbakir, Dicle University, Faculty of Medicine, Diyarbakir, Turkey, [2]Pediatric, Dicle University School of Medicine, Department of Pediatric Infectious Disease, Diyarbakir, Turkey, [3]Infectious Disease and Clinical Microbiology, Dicle University School of Medicine, Department of Clinical Microbiology and Infectious Disease, Diyarbakir, Turkey

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Background. Brucellosis is still endemic in many developing countries and frequently leads to misdiagnosis and treatment delays. Indirect inflammatory markers such as mean platelet volume (MPV), platelet distribution width (PDW), red cell distribution width (RDW), neutrophil to lymphocyte ratio (NLR) and platelet to lymphocyte ratio (PLR) have been identified as markers of inflammation. The present study aimed to evaluate and compare the levels of these markers for prognostic purposes, and to assess the correlation of C-reactive protein (CRP) with brucellosis in adults and children.

Methods. The study included 137 adults and 141 age- and gender-matched healthy controls, as well 71 children and 81 age- and gender-matched healthy controls. Hematological parameters and CRP were retrospectively recorded and compared between the adult and pediatric patients.

Results. The mean age of the adult patients (54% female) was 43.1 ± 15.4 years, whereas the mean age of the pediatric patients (50.7% male) was 9.5 ± 3.6 years. Significantly higher lymphocyte count, and lower neutrophil count, platelet count, RDW, MPV, NLR and PLR values were found in adult brucellosis patients compared with their healthy subjects, whereas higher lymphocyte count, PDW and lower neutrophil count, platelet count, MPV, NLR and PLR values were observed in pediatric brucellosis patients compared with the control subjects. Significantly higher neutrophil count ($p = 0.019$) and NLR ($p < 0.001$) were found in adult patients compared with the pediatric patients. Positive correlation was found between CRP and NLR ($R^2 = 0.052$, $P = 0.011$), PLR ($R^2 = 0.061$, $P = 0.006$) in adult patients.

Conclusion. Based on our findings, we consider that the use of complementary indirect markers such as MPV, NLR, PLR and RDW together with the CRP test – which is used concomitantly with serological diagnostic tests in situations where brucellosis is suspected – might be helpful in the diagnosis and follow-up of brucellosis, as well as in the evaluation of complications and response to therapy, in both adult and pediatric brucellosis patients.

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1148. Impact of Procalcitonin (PCT)-Guided Antibiotic Therapy on Mortality in Critically Ill Patients: A Systematic Review and Meta-Analysis of 18 Randomized Controlled Trials

Dominique Pepper, MD MBChB[1]; Junfeng Sun, PhD[1]; Chanu Rhee, MD, MPH[2]; Judith Welsh, BSN[3]; John H. Powers III, MD[4]; Robert L. Danner, MD[5] and Sameer Kadri, MD[1]; [1]Critical Care Medicine Department, National Institutes of Health, Bethesda, MD, [2]Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, Massachusetts, [3]National Institutes of Health Library, National Institutes of Health, Bethesda, Maryland, [4]Clinical Research Directorate/Clinical Monitoring Research Program, Leidos Biomedical Research, Inc., NCI Campus at Frederick, Frederick, MD, [5]Critical Care Medicine Department, National Institutes of Health Clinical Center, Bethesda, Maryland

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Background. Procalcitonin (PCT)-guided antibiotic therapy has been shown to reduce antibiotic use in critically ill patients with suspected or proven infection, but its impact on mortality remains uncertain. Our meta-analysis examines the effect of PCT-guided antibiotic therapy on survival in critically ill patients.

Methods. We searched PubMed, the Cochrane Library, Scopus, Web of Science, EMBASE and clinicaltrials.gov electronic databases up to October 2016. The meta-analysis was restricted to randomized controlled trials (RCTs) of critically ill patients receiving PCT-guided antibiotic treatment and reporting survival or antibiotic duration. Study quality was assessed using the Cochrane risk of bias tool. Two reviewers conducted all review stages independently, and a third reviewer adjudicated any differences. Data was pooled using random-effects meta-analysis.

Results. Of the 18 RCTs selected (n = 5,183 patients; Table), 17 assessed mortality and 11 assessed antibiotic duration; 8 scored ≥3 and 10 scored ≤2 out of 6 on the risk of bias assessment. Compared with controls, PCT-guided antibiotic treatment was associated with a significant reduction in mortality (20.7% vs. 23.0%; risk ratio [RR] 0.90[95% CI, 0.81–0.99], I^2=0%; Figure 1). Survival benefit was retained in the RCT subset with a lower risk of bias (score ≥ 3; RR 0.87 [95% CI, 0.77,0.98], I^2=0%; Figure 2) but not with higher risk (score ≤ 2; RR 0.98 [95% CI, 0.80–1.20], I^2=0%). Our analysis of the effect of PCT-guided antibiotic therapy on antibiotic duration displayed significant heterogeneity (I^2=61.2%, P = 0.004), which precluded reporting on aggregate effect. Important limitations were: single center RCT (n = 9), lack of double blinding (all studies) and variable protocol non-adherence and timeframes examined for mortality.

Conclusion. In a meta-analysis of RCTs of critically ill patients with suspected or proven infection, PCT-guided antibiotic treatment was associated with a significant reduction in mortality. The observed survival benefit was weighted towards RCTs of relatively higher quality. However, the plausibility of this finding, as well as the impact of protocol non-adherence on outcome needs further study.

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1149. Serial Procalcitonin Levels Correlate with Microbial Etiology in Hospitalized Patients with Pneumonia

Pierre Ankomah, MD, PhD[1]; Suzanne Mccluskey, MD[2]; Michael Abers, MD[3]; Benjamin Bearnot, MD[2]; Shreya Patel, MD, MPH[4]; Philipp Schuetz, MD, MPH[5]; Victor Chiappa, MD[2]; Kent Lewandrowski, MD[6]; Jatin Vyas, MD, PhD, FIDSA[7] and Michael Mansour, MD, PhD[8]; [1]Massachusetts General Hospital, Boston, Massachusetts, [2]Department of Medicine, Massachusetts General Hospital, Boston, Massachusetts, [3]Department of Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, [4]UCSF, San Francisco, California, [5]Medical University Clinic, Kantonsspital Aarau, Aarau, Switzerland, [6]Department of Pathology, Massachusetts General Hospital, Boston, Massachusetts, [7]Medicine; Infectious Disease, Massachusetts General Hospital, Boston, Massachusetts, [8]Massachusetts General Hospital, Division of Infectious Diseases, Boston, Massachusetts

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Background. Procalcitonin (PCT) is a biomarker that is finding increasing diagnostic and prognostic utility in lower respiratory infections. It remains unclear, however, whether it can be helpful in predicting the bacterial etiology of pneumonia, with a view to informing antibiotic choice and duration. This study examines the relationship between serial PCT measurements and microbial etiology in patients hospitalized for pneumonia to determine whether changes in PCT levels provide discriminatory information on microbial etiology.

Methods. We performed a subgroup analysis of data from a prospective cohort study of 505 patients admitted to a tertiary care center with findings concerning for pneumonia. Microbial etiology of pneumonia was determined from high quality respiratory samples, blood cultures or other relevant diagnostic tests according to standard protocols. Procalcitonin levels were measured serially during the first four days of hospitalization. We compared procalcitonin levels between different bacterial etiologies over the first four days of admission, using the Mann–Whitney-U test to assess for statistical significance.

Results. Out of 505 patients, the diagnosis of pneumonia was adjudicated in 317, and bacterial etiology determined in 62 cases. The predominant pathogens were *Staphylococcus aureus* (N = 18), *Streptococcus pneumoniae* (N = 6), *Pseudomonas aeruginosa* (N = 11) and *Haemophilus influenza* (N = 5). Admission levels of PCT were lowest in *Pseudomonas* infections and highest in pneumococcal infections, though not reaching statistical significance. On hospital days two and three, pneumococcal procalcitonin levels were significantly higher than all other etiologies, but on day four, there was no statistically significant difference in PCT values for different microbial etiologies.

Conclusion. Serial procalcitonin levels during the early course of bacterial pneumonia reveal a difference between pneumococcal and other bacterial etiologies, and may have an adjunct role in guiding antibiotic choice and duration.

Disclosures. **All authors:** No reported disclosures.

1150. A Novel Host-protein Assay Accurately Distinguishes Bacterial From Viral Upper Respiratory Tract Infections

Kfir Oved, PhD[1]; Eran Eden, PhD[1]; Chantal Van Houten, MD[2]; Tanya Gottlieb, PhD[1]; Roy Navon, MSc[1]; Asi Cohen, PhD[1]; Olga Boico, PhD[1]; Meital Paz, B.Sc.[1]; Liat Etshtein, MD[1]; Gali Kronenfeld, MSc[1]; Tom Friedman, MD[1,3]; Ellen Bamberger, MD[1,4,5]; Irina Chistyakov, MD[5,6]; Israel Potasman, MD, FIDSA[7]; Michal Stein, MD[8]; Adi Klein, MD[9]; Alain Gervaix, MD[10]; Isaac Srugo, MD[5,6] and Louis Bont, MD/PhD[2]; [1]MeMed Diagnostics, Tirat Carmel, Israel, [2]Division of Paediatric Immunology and Infectious Diseases, University Medical Centre Utrecht, Utrecht, Netherlands, [3]Rambam Health Care Campus, Haifa, Israel, [4]Bnai Zion Medical Center, Haifa, Israel, [5]Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel, [6]Department of Pediatrics, Bnai Zion Medical Center, Haifa, Israel, [7]Infectious Diseases, Bnai Zion Med. Ctr., Haifa, Israel, [8]Infectious Disease Unit, Hillel Yaffe Medical Center, Hadera, Israel, [9]Department of Pediatrics, Hillel Yaffe Medical Center, Hadera, Israel, [10]Pediatric Emergency Division, Geneva University Hospitals and University of Geneva, Geneva, Switzerland

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Background. Bacterial and viral infections are often clinically indistinguishable, particularly in upper respiratory tract infections (URTI), which leads to antibiotic misuse. A novel assay (ImmunoXpert™) that integrates measurements of three host-response proteins (TRAIL, IP-10, CRP) was recently developed to assist in differentiation between bacterial and viral etiologies. We evaluated the assay performance in URTI patients and compared it with standard laboratory measures.

Methods. We performed a sub-analysis of 464 patients with clinical suspicion of URTI enrolled in three previously conducted multi-center clinical studies that evaluated the assay performance in patients with acute infections: 'Curiosity' study (NCT01917461), 'Opportunity' study (NCT01931254), and 'Pathfinder' study (NCT01911143). Comparator method was predetermined criteria combined with expert panel adjudication, which was blinded to the test results. Diagnostic performance was evaluated by comparing test and comparator method outcomes.

Results. A unanimous panel adjudication was attained for 61 bacterial (13%) and 241 viral (52%) patients (162 patients (35%) had an indeterminate diagnosis). The assay distinguished between bacterial and viral infected patients with a sensitivity of 92% (95% CI: 82%- 98%) and specificity of 93% (88%-96%) with 11% equivocal test results. Overall the assay outperformed other routine laboratory tests (FIG 1), including: white blood cell count (WBC; cutoff 15,000 cells/μL, sensitivity 48% (35%-60%), $P < 10^{-6}$; specificity 85% (80%-90%), $P < 0.05$); CRP (cutoff 40 mg/L, sensitivity 82% (72%–92%), $P = 0.16$, specificity 79% (74%–84%), $P < 10^{-4}$); Procalcitonin (PCT; cutoff 0.5 ng/mL, sensitivity 22% (11%–32%), $P < 10^{-14}$, specificity 80% (74%–85%), $P < 0.001$); absolute neutrophil count (ANC; cutoff 10,000 cells/μL, sensitivity 58% (45%–71%), $P < 10^{-4}$, specificity 94% (91%–97%), $P = 0.7$).