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# Compilation of **ABSTRACTS**

Lab Medicine  
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SLRC

## **INTRODUCTION**

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# **LabMedicine**

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Banet, N., Lininger, R. A., Willis, M. S., & McCudden, C. R. (2011). Self-Discovered Breast Mass in a 38-Year-Old Woman. *Laboratory Medicine*, 42(2), 68-73.

**Abstract:** Patient: A 38-year-old Caucasian female  
Chief Complaint: The patient presented to her primary care physician with a self-discovered breast mass.  
History of Present Illness: The patient had no significant medical history except 2 pregnancies, the last of which resulted in a full-term pregnancy 6 months prior to her noticing the breast mass. Her primary care physician ordered a pregnancy test while the patient was in the office. The pregnancy test was positive, but a transvaginal ultrasound showed no intrauterine pregnancy. She was sent for a breast biopsy, and an abdominal CT was also performed.  
Past Medical History: G2P2, with no adverse events during either pregnancy. The patient reported missing 1 period after delivery, but it was followed by several normal menstruations before she noted the breast mass. She has not yet reached the age to begin screening for breast cancer (BRCA) and has never had a mammogram.  
Family History: No family history of malignancy.  
Social History: The patient is a non-smoker.  
Physical Exam Findings: On admission, the physical exam showed an adult woman in no acute distress. Her abdomen was soft and non-distended.  
Laboratory, Radiology, and Pathology Findings: Laboratory values on admission are noted in Table 1. A

CT scan of the chest, abdomen, and pelvis was performed. The results are summarized in Image 1. Histologic images of a splenic resection are shown in Image 2.

**Subjects:** 1. Breast -- Pathology, 2. Gonadotropins, Chorionic -- Blood, 3. Choriocarcinoma -- Diagnosis

Moses, E., I., Hamzah, A., Abdullah, B., & Yusoff, N. (2011). Usefulness of N-Terminal-Pro-B-Type Natriuretic Peptide as a Screening Tool for Identifying Pediatric Patients With Congenital Heart Disease. *Laboratory Medicine*, 42(2), 75-80.

**Abstract:** Background: The aim of this study was to evaluate the usefulness of N-terminal-pro-B-type natriuretic peptide (NT-proBNP) as a screening tool in the diagnosis of congenital heart disease (CHD) among pediatric patients. Methods: N-terminal-pro-B-type natriuretic peptide concentrations were analyzed in 119 pediatric patients with CHD and 33 healthy pediatric patients. Results: N-terminal-pro-B-type natriuretic peptide levels in normal patients (mean, 120; range: 60-380 pg/mL) differed significantly from CHD patients with acyanotic heart diseases (mean, 372; range: 60-3000 pg/mL,  $P < 0.001$ ) and cyanotic heart diseases (mean, 1023; range: 182-3000 pg/mL,  $P < 0.001$ ). The diagnostic performance of NT-proBNP to differentiate patients with and without CHD was high with an area under curve of 0.79. At a cut-off value of 98 pg/mL, the sensitivity was 82% and the specificity was 46%. Conclusion: N-terminal-pro-B-type natriuretic peptide measurement may be a valuable tool in screening pediatric patients for CHD.

**Subjects:** 1. Heart Defects, Congenital -- Diagnosis  
2. Natriuretic Peptide, Brain -- Diagnostic Use

Aquino-Esquadro, L., Mehendale, S., Kadkol, S., Rondelli, D., & Gaitonde, S. (2011). JAK2 V617F Positive Essential Thrombocythemia Complicated by B-cell Chronic Lymphocytic Leukemia: An Uncommon Association and Diagnostic Pitfall. *Laboratory Medicine*, 42(2), 83-85.

**Abstract:** The development of a chronic lymphoproliferative disorder in a patient with a clonally distinct myeloproliferative neoplasm (MPN) is a rare phenomenon. Here we report a case of essential thrombocythemia (ET) who, 15 years later, developed B-cell chronic lymphocytic leukemia (B-CLL). Molecular studies showed the myeloid cells were positive for the JAK2 V617F mutation, while the CLL cells were negative, emphasizing that these are 2 distinct, unrelated clonal hematologic malignancies in the same individual.

**Subjects:** 1. Leukemia, Lymphocytic, Chronic -- Familial and Genetic, 2. Thrombocytosis -- Familial and Genetic  
3. Protein Kinases -- Blood

D., Freitas, A. R., L., & E. (2011). A Challenge for Clinical Laboratories: Detection of Antifungal Resistance in Candida Species Causing Vulvovaginal Candidiasis. *Laboratory Medicine*, 42(2), 87-93.

**Abstract:** Background: To determine the in vitro susceptibility of vaginal yeasts against 7 antifungals by using 2 different methods and to evaluate if there is a possibility to use disk-diffusion (DD) method in the daily routine. Methods: Eighty-eight vaginal yeasts were tested against 5 antifungal azoles and 2 polyenes, according to Clinical and Laboratory Standards Institute (CLSI) documents DD (M44-A) and broth microdilution (MD) (M27-A3). Results: Resistance was recorded for ketoconazole (KETO), itraconazole (ITR), miconazole amphotericin B (AMB), and nystatin (NYS). Between DD and MD, higher rates of agreement were observed for AmB (98.9%), voriconazole (VOR) (84.1%), and NYS (77.3%). For the other antifungals, the agreement varied from 34.1% (KETO) to 71.0% fluconazole (FLU). Conclusion: While the DD method may be a useful tool to determine the antifungal susceptibility profile in clinical laboratories in the future, it still requires improvements in its standardization since it was not reliable in detecting resistance in vitro.

**Subjects:** 1. Candida, 2. Candidiasis, Vulvovaginal -- Microbiology, 3. Drug Resistance, Microbial -- Evaluation, 4. Antifungal Agents, 5. Microbial Culture and Sensitivity Tests -- Methods

Nanzigu, S., Waako, P., Petzold, M., Kiwanuka, G.,  
Dungu, H., Makumbi, F., & ... Eriksen, J. (2011).  
CD4-T-Lymphocyte Reference Ranges in  
Uganda and Its Influencing Factors. *Laboratory  
Medicine*, 42(2), 94-101.

**Abstract:** Background: Given the importance of CD4-T-lymphocyte monitoring in HIV/ART management, we established CD4/CD8 reference ranges in Uganda and studied factors associated with CD4/CD8 in a normal population. Methods: Blood samples for 206 HIV seronegative healthy volunteers from the Mbarara and Kampala districts in Uganda were analyzed using the PanLeucogating protocol. Results: The reference ranges reported include data from 172 participants with no current or serious recent health problems. The 95% reference ranges for absolute CD4 (ACD4) count was 418-2105 cells/ $\mu$ L, 256-1619 for absolute CD8 count, and 0.52-4.1 for CD4/CD8 cell ratio, which is wider than the reference ranges currently used in Uganda. Recent illnesses/medications and socio-demographic factors affected the CD4-T-lymphocyte count. Conclusion: The CD4 reference ranges in Uganda were established using a cost-effective method, recommended and available in resource-limited settings. Effect of prevalent infections and socio-demographic differences on CD4-T-lymphocyte levels would need consideration in HIV/ART clinical management.

**Subjects:** 1. Reference Values, 2. T Lymphocytes  
3. Lymphocytes, 4. Lymphocyte Count

Yonghua, W., Tiancheng, W., Wenhua, X., Hongwei, G., & Zhenrong, L. (2011). Urinary Prostate-Specific Antigen is Elevated in Female Patients with Cushing's Syndrome. *Laboratory Medicine*, 42(2), 102-105.

**Abstract:** Background: It has been demonstrated that the expression of prostate-specific antigen (PSA) is known to not be organ or gender specific but rather a steroid hormone mediated response, and the level of PSA is elevated in the serum of women with hyperandrogenic syndromes. The urinary profile of PSA in female subjects is less clear. We investigated the expression of urinary PSA in female subjects with Cushing's syndrome and the relationship between urinary PSA and 2 steroid hormonal metabolites, 17-hydroxycorticosteroids (17-OHCS) and 17-ketosteroids (17-KS). Methods: We classified 97 female patients into 1 of 3 groups: Group A (n=37), patients with Cushing's syndrome (n=30), or adrenocortical hyperplasia (n=7); Group B (n=29), patients with primary hyperaldosteronism (n=18) or pheochromocytoma (n=11); and Group C (n=31), patients with non-adrenal diseases, including hypertension (n=12) and Type 2 diabetes (n=19). Patients with Cushing's syndrome or primary hyperaldosteronism were defined by clinical symptoms and laboratory confirmation. Patients with pheochromocytoma were defined by clinical symptoms, laboratory confirmation, and computed tomography or MRI. Patients with non-adrenal diseases were defined by a serum cortisol and plasma adrenocorticotrophic

hormone (ACTH) level within normal limits. Patients taking any medications in this category were excluded. Biochemical indicators related to the steroid hormonal metabolism, such as 17-OHCS, 17-KS, PSA, and creatinine (Cre) of 24-hour urine in these subjects were measured. The 17-OHCS, 17-KS, and PSA were all adjusted for 24-hour urinary Cre. Results: The 24-hour urinary PSA levels were significantly higher ( $P < 0.0001$ ) in the female patients with Cushing's syndrome (mean  $\pm$  SE =  $17.52 \pm 2.10 \mu\text{g/mol Cre}$ ) than in the controls (mean  $\pm$  SE =  $4.65 \pm 1.23 \mu\text{g/mol Cre}$ ). Similarly, there was also a significant difference ( $P < 0.01$ ) between 24-hour urinary 17-KS of the female patients (mean  $\pm$  SE =  $7.17 \pm 0.59 \text{ mmol/mol Cre}$ ) and the controls ( $6.17 \pm 0.55 \text{ mmol/mol Cre}$ ). A correlation was observed between 24-hour urinary PSA level and 24-hour urinary 17-KS concentration ( $r_s = 0.720$ ,  $P < 0.01$ ). In Group A, the area under the curve (AUC) value of PSA (0.853,  $P < 0.001$ ) was greater than that of 17-OHCS (0.811,  $P < 0.001$ ) and 17-KS (0.693,  $P < 0.01$ ), respectively. In Group B, the AUC value of PSA (0.722,  $P < 0.01$ ) was greater than that of 17-OHCS (0.663,  $P > 0.01$ ) and 17-KS (0.632,  $P > 0.01$ ), respectively. Conclusions: Urinary PSA was elevated in female patients with Cushing's syndrome. It indicates that urinary PSA may be an additional parameter for a better definition of female patients suffering from Cushing's syndrome.

- Subjects:** 1. Prostate-Specific Antigen -- Urine  
2. Cushing's Syndrome -- Diagnosis



Tolan Jr., Robert W. (2011). Fascioliasis Due to *Fasciola hepatica* and *Fasciola gigantica* Infection: An Update on This 'Neglected' Neglected Tropical Disease. *Laboratory Medicine*, 42(2), 107-117.

**Abstract:** Fascioliasis, an infection due to the food- and water-borne trematodes *Fasciola hepatica* and *Fasciola gigantica*, is among the most neglected of the neglected tropical diseases. Among the estimated 91.1 million humans at risk for infection worldwide, as many as 17 million may be infected. Certain areas of the world bear the burden of the highest prevalence of infection. There, school-age children are the most likely to be infected. In the United States, rare cases have been reported among immigrants from endemic areas, returned travelers to endemic regions, and individuals residing in Hawaii, California, and Florida. Indigenous cases have almost always been associated with consumption of watercress. Diagnosis is made serologically most often, although stool examination for the eggs is fruitful if obtained when the adult worm is laying eggs. With an appropriate index of suspicion, laboratory and imaging studies often confirm the suspected diagnosis. Triclabendazole is the treatment of choice.

**Subjects:** 1. Fascioliasis

Verri, A., Jalali, G., Cecchini, G., Diani, S., Dorji, T., Kilpatrick, M. W., & ... Walat, R. J. (2011). Significant Progression of Uterine Cervical Epithelial Lesion Accompanied by Marked Increase in 3q26 Gene Amplification. *Laboratory Medicine*, 42(3), 134-136.

**Abstract:** Clinical History Patient: A 35-year-old Caucasian female Chief Complaint: Abnormal cervical smear History of Present Illness and Principal Laboratory Findings: A ThinPrep Pap Test reported atypical squamous cells of uncertain significance in November 2008. The patient tested positive for human papillomavirus type 52 (HPV-52) by polymerase chain reaction (PCR) followed by reverse dot blot. No lesions were identified on colposcopy. An automated fluorescence in situ hybridization (FISH) assay for detection of 3q gain in cervical cells (oncoFISH cervical test, Ikonisys Clinical Laboratory, New Haven, CT) was positive, showing 3 nuclei with at least 5 copies of 3q26 (Image 1). A return visit within 6 months was scheduled, but the patient did not return until 1 year later. A conventional pap smear at that time was interpreted as showing "atypical squamous cells, cannot exclude high-grade squamous intraepithelial lesion (atypical squamous cells) (HSIL [ASC-H])." Human papillomavirus type 52 positivity persisted. A repeat oncoFISH cervical test was strongly positive, showing 264 nuclei with at least 5 copies of 3q26 gain (Image 1).

Subsequent colposcopy revealed an acetowhite area, of which biopsy showed areas of cervical intraepithelial neoplasia (CIN2-CIN3) with extension into endocervical crypts. She underwent loop electrosurgical excision procedure (LEEP) conization, and histological examination confirmed the biopsy results. The surgical margins of resection were free of the lesion (Image 2). Past Medical History: Oral contraceptive use, smoking, no abnormal bleeding, no previous gynecological operations.

**Subjects:** 1. Cervical Intraepithelial Neoplasia -- Diagnosis, 2. Cervical Smears, 3. Cancer Screening -- Methods.

Matthew I., M., & Behan, K. (2011). ABO Discrepancy and Hemolytic Anemia Post Liver Transplant due to Passenger Lymphocyte Syndrome. *Laboratory Medicine*, 42(3), 137-139.

**Abstract:** Clinical History Patient: 54-year-old male  
Chief Complaint: High fever, diarrhea, and skin rash  
History of Present Illness: The patient is blood type group AB, Rh(D) positive with nonalcoholic steatohepatitis (NASH). Due to the advanced nature of his disorder, he received a liver transplant; the donor was group B. The patient received 24 units of blood during and after surgery. Fourteen days post transplant he was discharged. Thirty one days post transplant the patient presented with the current symptoms. Hematology workup revealed pancytopenia with a critically low hemoglobin concentration. The blood bank workup revealed an ABO discrepancy and an apparent auto-anti-E antibody. (Table 1) Past Medical History: The patient has a history of diabetes mellitus. The patient had gastric bypass 25 years prior to the transplant, resulting in a weight loss of 115 pounds. One year ago the patient was diagnosed with NASH.

**Subjects:** 1. Anemia, Hemolytic, 2. Liver Transplantation -- Adverse Effects, 3. Blood Group Incompatibility -- Complications, 4. Hemolysis

Blumen, S. R., Naud, S., Palumbo, M., McIntosh, B., & W. (2011). Measuring the Application of Quality System Essentials in Vermont Clinical Laboratories. *Laboratory Medicine*, 42(3), 151-157.

**Abstract:** Objective: Clinical laboratorians perform critical testing on patient samples to provide vital information used to aid in medical diagnoses, influence therapeutic treatment, and potentially impact public health. The goal of this study was to determine laboratorians' knowledge of quality measures in their workplace. Methods: A survey of clinical laboratorians was conducted in a small, predominantly rural state regarding their awareness of different components of quality assurance systems in their workplace, whether the effectiveness of these quality assurance (QA) systems was measured, and whether it was perceived to contribute to quality outcomes in the laboratory. This article examines the relationship between job title, years of experience, and knowledge of QA measures in the laboratory. Results: Laboratory supervisors were most likely to know about the quality assurance procedures in the laboratory, while inexperienced laboratorians with 0 to 10 years of experience were most likely to not know whether the effectiveness of the quality assurance procedures was being assessed, and whether the implementation of the quality assurance procedures

contributed to quality of testing in the laboratory.  
Conclusion: Further education and training are needed so all laboratorians performing critical medical tests are aware of the quality assurance systems in place in their laboratories.

**Subjects:** 1. Quality Assurance -- Standards  
2. Knowledge, 3. Laboratory Personnel, 4. Clinical Laboratories

Topić, R., Dodig, S., Živčić, J., & Raos, M. (2011).  
Allergen Specific Immunoglobulin E in Children  
Under 6 Years Old With Total Immunoglobulin E  
Below 10 kU/L. *Laboratory Medicine*, 42(3), 158-  
160.

**Abstract:** Objective: This study assesses the rate of allergen specific immunoglobulin E (sIgE) antibody positive findings in children under 6 years old with total immunoglobulin E (tIgE) concentrations below 10 kU/L as well as the relationship between sIgE concentrations and other diagnostic parameters. Methods: In vitro and in vivo findings were retrospectively analyzed in 193 children. Results: There were significant differences in serum tIgE concentrations and peripheral blood eosinophil granulocyte counts between the groups of children with positive and negative sIgE findings. Negative skin prick tests were found in 54% of children with positive sIgE findings. Conclusions: We suggest that sIgE concentrations be determined in children under 6 years old irrespective of tIgE concentrations if an allergy is indicated by clinical symptoms. Blood sampling for immunoglobulin E (IgE) determination should preferably be performed during the period of allergen exposure. Timely detection of sensitization is crucial to identify children at an increased risk of allergic disease.

**Subjects:** 1. Immunoglobulins -- Blood -- In Infancy and Childhood

Zhu, X., Ma, L., Xiao, J., & Tian, Y. (2011).

CD4<sup>+</sup>CD25<sup>high</sup>CD127<sup>low</sup> Regulatory T Cell and Interleukin 2 in Transitional Cell Carcinoma. *Laboratory Medicine*, 42(3), 163-167.

**Abstract:** Objective: Regulatory T cell (Treg) and interleukin-2 (IL-2) are 2 important factors in the immune system. Our goal was to find out the frequency of Treg and IL-2 levels in different clinicopathological transitional cell carcinoma (TCC) patients and the relationship between them. Methods: We investigated the proportion of Treg and IL-2 levels from 65 patients with TCC, 38 with benign urinary diseases, and 37 healthy subjects, and analyzed different clinicopathologic characteristics and the changes before and after surgery. Results: We found the proportion of Treg from patients with TCC was significantly higher than the other 2 groups, and the IL-2 level in the TCC group was significantly decreased compared with the other 2 groups. Both Treg and IL-2 levels were correlated with surgery, tumor stage, number of tumors, metastasis, and recurrence. Conclusion: Regulatory T cell and IL-2 may be responsible for immune regulation and the result may also contribute to our understanding of immunotherapy in these patients.

**Subjects:** 1. Carcinoma, Transitional Cell -- Immunology, 2. Immunity, Cellular, 3. Interleukins -- Blood, 4. T Lymphocytes



Gohari, L., Moghadam, F., Mahdi, M., Rajab, A., & Broumand, B. (2011). Fructosamine as a Complementary Fasting Blood Sugar Test for Glycemic Control in Diabetic Patients on Hemodialysis. *Laboratory Medicine*, 42(3), 168-170.

**Abstract:** Objective: Diabetic patients with end-stage renal disease (ESRD) are more anemic and have low false hemoglobin A<sub>1c</sub> (Hb A<sub>1c</sub>) levels. In diabetic mellitus (DM) patients undergoing hemodialysis (DM-HD), fructosamine or glycated serum proteins (GSP) circulate longer than hemoglobin (Hb) in blood and can act as better indicators for monitoring blood glucose at average levels. Materials and Methods: In a total of 57 patients (30/57 DM-HD patients and 27/57 DM patients without renal failure [DM-non HD]), Hb A<sub>1c</sub> and fructosamine along with other serum parameters were measured. Hb A<sub>1c</sub> was measured by ion-exchange chromatography, and fructosamine was measured by spectrophotometry. Results: Fructosamine mean in DM-HD and DM-non-HD patients was  $494.25 \pm 233.88$   $\mu\text{mol/L}$  and  $398.34 \pm 205.05$   $\mu\text{mol/L}$  respectively ( $P=0.0169$ ). The Hb A<sub>1c</sub> mean for the study groups was  $7.88 \pm 2.27\%$  and  $9.47 \pm 2.51\%$  ( $P=0.086$ ). The fructosamine/Hb A<sub>1c</sub> ratio in DM-HD patients was significantly higher than that in DM-non-HD patients ( $P=0.002$ ). Conclusion: Fructosamine can be potentially considered as a

complementary test along with fasting blood sugar to assess control of DM patients with ESRD.

**Subjects:** 1. Diabetes Mellitus, Type 2 --  
Physiopathology, 2. Hemoglobin A, Glycosylated  
3. Kidney Failure, Chronic -- Physiopathology  
4. Blood Glucose Monitoring -- Methods

Haqparast, S., Ramandi, M., Samadikuchaksaraei, A., & Pazhakh, V. (2011). A Single Nucleotide Polymorphism -1131T>C in the Apolipoprotein A5 Gene Modulates the Levels of Triglyceride. *Medicine*, 42(3), 171-174.

**Abstract:** Background: The recently discovered apolipoprotein A5 (APOA5) gene has been shown to be important in determining plasma triglyceride (TG) levels, a major cardiovascular disease risk factor. We searched for possible associations of the APOA5 gene polymorphisms -1131T>C with the levels of TG in an Iranian population. Methods: A total of 128 Iranians (73 cases with coronary heart disease [CHD] and 55 normal subjects) were genotyped by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) for this single nucleotide polymorphism. Results: Allele frequencies observed in our population were 0.152 for the C allele and 0.848 for the T allele, which are similar to Caucasian populations ( $P=0.355$ ). Conclusions: As expected, we observed a strong association between the APOA5 -1131C allele and elevated plasma TG levels. Total cholesterol heterozygotes and CC homozygotes have significantly higher TG levels ( $2.76 \pm 1.30$  mmol/L) than TT homozygous individuals in the CHD group ( $2.05 \pm 1.15$  mmol/L,  $P=0.027$ ). This trend was also present in the normal subjects ( $P=0.014$ ).

**Subjects:**1. Polymorphism, Genetic, 2. Triglycerides -- Blood, 3. Apolipoproteins

Marlar, R. A., & Gausman, J. N. (2011). Do You Report an Accurate International Normalized Ratio? Find Out Using Local Verification and Calibration. *Laboratory Medicine*, 42(3), 176-182.

**Abstract:** The current method for monitoring vitamin K antagonist (AVK) anticoagulant therapy is the international normalized ratio (INR) that provides consistency and standardization for the prothrombin time (PT) assay value. Even after the standardization of the INR, inaccuracies of this value have still been reported. To make the INR even more accurate, better local assessments of INR parameters are becoming available. These new methods use plasmas with certified INR values to locally verify and, if necessary, recalculate the international sensitivity index (ISI) for the local laboratory's reagent and instrument system. This CE Update will discuss the concepts of local verification and calibration to better define the manufacturer's assigned ISI value, thus reporting more accurate INR results.

**Subjects:** 1. Calibration, 2. Drug Monitoring  
3. International Normalized Ratio, 4. Warfarin --  
Therapeutic Use

John, L., Patel, T., Hays, S., Fenves, A., & Wians Jr., .,  
(2011). A Snowflake-Like, Powdery Substance  
on the Head and Neck of an Adult  
Male. *Laboratory Medicine*, 42(4), 196-197.

**Abstract:** Patient: 53-year-old African-American male  
Chief Complaint: Shortness of breath, lower extremity swelling, nausea, vomiting, diarrhea, altered taste sensation, and decreased urine output. History of Present Illness: Patient presented to the emergency room (ER) with complaints of nausea and vomiting for 2 months, shortness of breath for the last few days, altered taste sensation, and worsening of preexisting lower extremity swelling. Other complaints included blurred vision, diarrhea, and extreme weakness. Past Medical and Surgical History: Type II diabetes mellitus and hypertension for about 10 years. No significant surgical history. Social History: No tobacco use, occasional alcohol use, and no IV drug abuse. Physical Exam Vital Signs: Temperature, 97.7°F; respiratory rate, 20/minute and unlabored; pulse, 91 bpm; and, blood pressure, 177/80 mmHg. Pertinent physical examination findings were significant for lower extremity edema up to the knees, and the presence of fine white crystals distributed in patches on the head and neck (Image 1). Principal Laboratory Findings: Table 1.

**Subjects:** 1. Powders, 2. -- Diagnosis  
3. Kidney Failure, Chronic -- Complications

Thompson, M. P., Hidalgo, D., Kim, A., & Ansari, M. (2011). The VITROS Immunodiagnostics Products Anti-HIV 1+2 Assay: A Rapid and Reliable Method for HIV Screening. *Laboratory Medicine*, 42(4), 209-212.

**Abstract:** Background: To ensure increased awareness of HIV status by patients, the Centers for Disease Control and Prevention (CDC) has issued new guidelines that greatly expand screening recommendations. The goal of the present study was to assess the overall reliability, sensitivity, specificity, and turnaround time (TAT) of the VITROS Anti-HIV 1+2 Assay (Ortho Clinical Diagnostics, Rochester, NY) in a large community hospital setting. The assay was recently approved by the Food and Drug Administration (FDA). Methods: We compared our current Abbott HIVAB assay (Abbott Laboratories, Abbott Park, IL) with how the VITROS performed on the random access VITROS ECi/ECiQ System in a head-to-head comparison of 298 patient samples and a retrospective comparison of TAT over an 8-month period of utilization. Results: Our data indicate that the VITROS is as sensitive (100%, n=298) and more specific (98% vs 83%) than the Abbott HIVAB and has a faster average TAT (156 minutes vs 1266 minutes). Conclusions: Use of this rapid and reliable assay will lead to greater awareness of HIV status and, hopefully, a decrease in incidence of HIV disease.

**Subjects:** 1. AIDS Serodiagnosis -- Methods  
2. Health Screening, 3. Reagent Kits, Diagnostic --  
Evaluation

Soltanpour, M., Zahra, S., Pourfathollah, A., Samiei, S., Meshkani, R., Kiani, A., & ... Kavari, M. (2011). The A1298C Mutation in Methylenetetrahydrofolate Reductase Gene and Its Association With Idiopathic Venous Thrombosis in an Iranian Population. *Laboratory Medicine*, 42(4), 213-216.

**Abstract:** Background: Venous thrombosis (VT) is an important cause of mortality and morbidity resulting from acquired and inherited factors. The A1298C mutation of the methylenetetrahydrofolate reductase (MTHFR) gene remains a controversial risk factor for VT. In this study we investigated a possible association between A1298C mutation in the MTHFR gene and fasting hyperhomocysteinemia with VT. Materials and Methods: The study was comprised of 200 patients with a diagnosis of VT and 100 healthy subjects as a control. A1298C mutation analysis was performed by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method and homocysteine measurement was carried out by enzyme immunoassay. Results: The prevalence of A1298C genotypes between patients and controls was almost similar ( $P=0.9$ ). The frequency of the 1298C allele was 38.5% and 36.5% in patients and controls, respectively, and did not differ significantly between the 2 groups (odds ratio [OR], 0.811, 95% CI [0.566-1.183],  $P=0.29$ ). The fasting plasma total homocysteine level was



significantly higher in patients than controls ( $P=0.001$ ).  
Conclusions: We concluded that hyperhomocysteinemia but not MTHFR A1298C mutation is a significant risk factor for VT in the Iranian population.

**Subjects:** 1. Mutation, 2. Venous Thrombosis -- Familial and Genetic, 3. Venous Thrombosis -- Risk Factors  
4. Homocysteine -- Metabolism

Jingjing, Q., & Shaoqing, J. (2011). Correlations  
Between Allelic Polymorphism of TNF $\beta$  in 1069  
Locus and Severe Post-Trauma  
Sepsis. *Laboratory Medicine*,42(4), 217-219.

**Abstract:** Objective: To investigate the possible association between allelic polymorphism of tumor necrosis factor  $\beta$  (TNF $\beta$ ) in 1069 locus and severe post-trauma sepsis in the Han Chinese of Jiangsu Province, China. Methods: We studied the polymorphism of single-base mutation of the TNF $\beta$  gene in 58 patients with severe post-trauma sepsis and 88 healthy controls, using polymerase chain reaction (PCR) amplification and polyacrylamide gel electrophoresis (PAGE) analyses. Results: The frequency of the TNF $\beta$ \*2 allele in patients complicated with post-trauma sepsis was significantly higher than that in healthy controls (68.9% vs 55.1%, P=0.015, RR=1.73). Conclusion: Our results implied an association between an allelic polymorphism of TNF $\beta$  in 1069 locus and severe post-trauma sepsis susceptibility in a Chinese population.

**Subjects:** 1. Polymorphism, Genetic, 2. Trauma --  
Complications, 3. Sepsis -- Familial and Genetic  
4. Tumor Necrosis Factor

Razmkhah, F., Pazhakh, V., Zaker, F., Atashrazm, F., & Sheikhi, M. (2011). Frequency of CYP1A1\*2C Polymorphism in Patients with Leukemia in the Iranian Population. *Laboratory Medicine*, 42(4), 220-223.

**Abstract:** Background: CYP1A1, a member of the cytochrome P450 (CYP) enzymes, plays a very important role in metabolizing carcinogens. The aim of this case-control study was to detect the frequency of CYP1A1\*2C polymorphism in Iranian leukemic patients and determine the role of this allele's variants, if any, as a risk factor for developing leukemia. Methods: Thirty-nine patients with chronic myeloid leukemia (CML), 105 with acute myeloid leukemia (AML), 95 healthy volunteers as the adult control group, 85 children with acute lymphoblastic leukemia (ALL), and 94 healthy children as the children control group were studied. Genomic DNA was assayed for restriction fragment length polymorphism (RFLP) in the CYP1A1\*2C loci by amplification followed by digestion with BsrDI. Results: The frequencies of AA genotype (wild) were 82.05%, 62.85%, 84.70%, 85.10%, and 80% in CML, AML, ALL, the children control group, and the adult control group, respectively. The frequencies of AG genotype (heterogeneous) were 17.95%, 36.20%, 15.30%, 14.90%, and 18.95% in CML, AML, ALL, the children control group, and the adult control group, respectively. The frequencies of GG genotype (mutant) were 0.95%

and 1.05% in AML and the adult control groups respectively; whereas, it was not observed in CML, ALL, or the children control group. Logistic regression analysis showed a significant correlation between the CYP1A1\*2C polymorphism AG and AML patients (OR=2.4, 95% CI=1.3-4.7, P>0.05). Conclusion: A higher frequency of CYP1A1\*2C, observed in AML patients, compared with the adult control group indicates an increased risk for AML in individuals carrying the heterozygote allele CYP1A1\*2C. However, the results did not show any association between CYP1A1\*2C genotypes and risk of ALL or CML.

**Subjects:** 1. Leukemia, Myeloid, Chronic -- Familial and Genetic, 2. Leukemia, Lymphocytic, Acute -- Familial and Genetic, 3. Leukemia, Myeloid, Acute -- Familial and Genetic

Mackay, I. R. (2011). Autoimmune Hepatitis: From the Clinic to the Diagnostics Laboratory. *Laboratory Medicine*, 42(4), 224-233.

**Abstract:** Autoimmune hepatitis (AIH), formerly known as chronic active hepatitis (CAH), first attracted attention around 1948. It probably existed as "subacute hepatitis" before that time, however. Young women were mainly affected and the outlook was poor. Suspicions of an immunological abnormality in CAH were raised by extreme hypergammaglobulinemia, but the likely primary culprit then seemed to be a persistently active virus in the liver. Various anti-tissue antibodies became recognized during 1955 to 1965, detected first to nuclear antigens by the lupus erythematosus (LE) cell test and immunofluorescence (IFL) for antinuclear autoantibody, then to a smooth muscle antigen with the true reactant later identified as the microfilament F actin, and then to an antigen enriched in endoplasmic reticulum (microsomes) of liver and kidney cells. The availability of recombinant or finely purified autoantigen now allows for automated molecular assays for some of these reactivities and this, with improved IFL technologies, has led to serological confidence in diagnosis with institution of highly effective suppressive therapies. Meanwhile immunologists remain sorely challenged in their attempts to define the pathogenetic steps from initiation, relentless persistence to ultimate hepatocytolytic destruction in this enigmatic liver disorder, AIH.

Autoimmune hepatitis has been a controversial subject since being named as such in 1965,<sup>6</sup> with eventual international endorsement in 1993.<sup>7</sup> Hence, relevant historical material is included.

**Subjects:**

1. Hepatitis, Autoimmune -- Immunology

Dimenstein, I. B. (2011). Principles and Controversies in Coding in Surgical Pathology. *Laboratory Medicine*, 42(4), 242-249.

**Abstract:** This article explores basic principles of Current Procedural Terminology (CPT) coding in the text of the American Medical Association (AMA) CPT manual's surgical pathology section. The sequence of actions in CPT code assignment in a surgical pathology practice is presented. The main controversial issues, as specimen vs container, bundling/unbundling, lymph node regional resection, tissue/procedure vs diagnosis, were discussed. The 1 container 1 specimen compromise at the accession stage is suggested as an assurance of specimen identification integrity. A table of colon specimens' CPT coding is presented as an example of practical applications. "Frontline" surgical pathology practitioners (ie, accession staff, histotechnologists, pathologists' assistants, and pathologists) are the article's targeted audience. Professional coders might extract from the materials a better understanding of the clinical part of the CPT coding in surgical pathology.

**Subjects:** 1. Current Procedural Terminology  
2. Coding, 3. Pathology, Clinical

Iwen, P. C., Thapa, I., & Bastola, D. (2011). Review of Methods for the Identification of Zygomycetes With an Emphasis on Advances in Molecular Diagnostics. *Laboratory Medicine*, 42(5), 260-266.

**Abstract:** Zygomycosis is a rapidly emerging fungal infection caused by the zygomycetes. The identification of specific species in the clinical laboratory using phenotypic methods is difficult. This article provides a generalized review on the current classification and diagnostic aspects of the zygomycetes with an emphasis on the application of molecular techniques for identification.

**Subjects:** 1. Zygomycosis -- Diagnosis  
2. Zygomycosis -- Microbiology, 3. Molecular Diagnostic Techniques



Dolinger, D. L., & Jacobs, A. A. (2011). Molecular Diagnostics and Active Screening for Health Care-Associated Infections: Stepping-Up the Game. *Laboratory Medicine*, 42(5), 267-272.

**Abstract:** Health care-associated infections (HAI) place a significant burden up the health care system. Studies have shown that routine screening of patients prior to or at the point of admission along with appropriate control strategies can significantly reduce HAI rates. The solution requires clinical laboratories to provide rapid, accurate, and precise results for analytes that comprise a screening program. It is through a concerted and collaborative effort between the clinical laboratories, the hospital infectious disease control officers, and the in vitro diagnostics manufacturers that significant downturns in HAI rates can be achieved.

**Subjects:** 1. Molecular Diagnostic Techniques  
2. Cross Infection -- Diagnosis, 3. Cross Infection -- Prevention and Control, 4. Health Screening -- Methods

Atashrazm, F., Zaker, F., Aghaeipour, M., & Pazhakh, V. (2011). Polymorphisms of the Methylene Tetrahydrofolate Reductase and Susceptibility to Acute Lymphoblastic Leukemia in Children. *Laboratory Medicine*, 42(5), 275-279.

**Abstract:**Background: Correlation between epigenetic factors and their effects on hematopoietic cells has led to a study of 2 common functional polymorphisms (C677T and A1298C) of 5,10-methylene tetrahydrofolate reductase (MTHFR) enzyme. The aim of this study was to assess the individual and/or combined roles of these 2 polymorphisms in pediatric acute lymphoblastic leukemia (ALL). Methods: Using polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) analyses, we studied the frequencies of the C677T and A1298C MTHFR genotypes in 103 pediatric ALL patients and 160 age-sex matched controls. We calculated the odds ratio (OR) of MTHFR genotypes to determine if 1 or both of these polymorphisms may be associated with childhood ALL. Results: The T allele frequency for MTHFR 677C>T was 22.2% and 18.45% in controls and cases, respectively. The C allele frequency for MTHFR 1298 A>C was 40.65% and 40.72% in controls and cases, respectively. The OR for MTHFR 677CT was 1.08 (95%CI 0.58-1.95) and OR for MTHFR 677TT was 0.25 (95%CI 0.05-10.24). The OR for MTHFR 1298 AC was 0.57 (0.95% CI 0.57-1.95) and for MTHFR CC was 0.96

(0.95% CI 0.37-2.45). The OR for the combined heterozygous status (677CT and 1298AC) was 1.08 (95% CI 0.41-2.82). Conclusion: Our findings suggest that the MTHFR C677T and A1298C gene variants lack a major influence on the susceptibility for pediatric ALL. Another result was that the C allele frequency for MTHFR 1298 A>C was significantly higher than those reported for most Asian and European populations. The C677T prevalence seems to be similar to those reported in most Asian populations.

**Subjects:**

1. Leukemia, Lymphocytic, Acute -- Familial and Genetic
2. Polymorphism, Genetic, 3. Oxidoreductases

Bilgen, T., & Keser, I. (2011). hMLH1 Gene is not Methylated in Osteosarcoma. *Laboratory Medicine*, 42(5), 280-282.

**Abstract:** Background: Epigenetic silencing of the hMLH1 gene by promoter methylation plays a role in initiation and progression of cancers by leading to increased genomic instability. There is no report on methylation status of the hMLH1 gene in osteosarcoma. Methods: In this study, we aimed to determine the methylation status of the hMLH1 gene in human osteosarcoma cells. The methylation status of the promoter region of the hMLH1 gene was determined by bi-sulfite sequencing (BSS) in U2OS human osteosarcoma and normal human diploid fibroblast cells (NHDFc). Methylated human gDNA by Sss I methylase enzyme was also used as a positive control. Results: Methylation was not detected in the promoter of the hMLH1 gene—neither in U2OS nor in NHDF cells. Conclusions: Our data showed the hMLH1 gene is not methylated in osteosarcoma, which may imply the genomic instability caused by hMLH1 inactivation does not have a role in osteosarcomas, unlike most other tumors.

**Subjects:** 1. Osteosarcoma -- Familial and Genetic  
2. Methylation

Lari, A., Pourmand, M., Moghadam, S., Abdossamadi, Z., Namvar, A., & Asghari, B. (2011). Prevalence of PVL-Containing MRSA Isolates Among Hospital Staff Nasal Carriers. *Laboratory Medicine*, 42(5), 283-286.

**Abstract:** Background: *Staphylococcus aureus* (*S. aureus*) carrying Panton-Valentine leukocidin (PVL) has become a serious global problem. Panton-Valentine leukocidin-positive *Staphylococcus aureus* can result in several infections, especially cutaneous ones. This study was conducted to determine the frequency of PVL-positive genes in methicillin-resistant *Staphylococcus aureus* (MRSA) among hospital staff nasal carriers. Methods: Collectively, 270 nasal swabs were taken from the personnel of 5 university hospitals in Tehran, Iran. Then polymerase chain reaction (PCR) was used to detect the PVL gene. Results: Among the samples taken, 72 (27%) *S. aureus* isolates were approved. Among the total isolates, there were 23 MRSA (32%) and 14 (19%) PVL gene-containing cases. Conclusion: This study determined that a prevalence of strains exists among hospital staff members who are continuously in direct contact with patients. This may propose the significance of detecting the carriers and decolonizing them to reduce transmission of *S. aureus* in the hospital.

**Subjects:** 1. Carrier State, 2. Methicillin-Resistant *Staphylococcus* 3.*Aureus*, 4. Health Personnel

Fengqiong, Z., Weibo, L., Yunwei, O., Wanyi, L., Meili, L., Guoyu, W., & ... Mingyuan, L. (2011). Association of TNF- $\alpha$  Gene Promoter Polymorphisms With Susceptibility of Cervical Cancer in Southwest China. *Laboratory Medicine*, 42(5), 287-290.

**Abstract:** Objective: Variations in the tumor necrosis factor-alpha (TNF- $\alpha$ ) gene may lead to changes in the level of TNF- $\alpha$  associated with the susceptibility to cancer. This study is designed to determine the association of TNF- $\alpha$  promoter polymorphisms with the susceptibility of cervical cancer among women living in Southwest China. Methods: Using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) and DNA sequencing, we analyzed the genotype and allele distributions of 4 single-nucleotide polymorphisms (SNP) of TNF- $\alpha$  gene in 239 cervical cancer patients and 110 controls. Results: Compared to controls, cervical cancer patients show a significant increase in the frequency of GA genotype at -308 G/A, and a significantly decreased frequency of the CT genotype. A significant decrease in the frequency of the T allele at -857 C/T ( $P < 0.05$ ) was also found. No significant differences of SNP genotype and allele at TNF- $\alpha$ -863 C/A and -238 G/A were observed between the 2 groups. Conclusion: An SNP at TNF- $\alpha$  -857 C/T and -308 G/A, but not -863 C/A or -238 G/A, were

significantly associated with an increased risk of cervical cancer in the studied population.

**Subjects:** 1. Cervix Neoplasms -- Familial and Genetic  
2. Polymorphism, Genetic, 2. Disease Susceptibility  
4. Genes, 5. Tumor Necrosis Factor

Loeffelholz, M. J. (2011). Avian Influenza (H5N1)  
Update: Role of the Clinical Microbiology  
Laboratory. *Laboratory Medicine*, 42(5), 291-  
298.

**Abstract:** This article provides an update on the H5N1 virus and the role of the clinical microbiology laboratory in the diagnosis of H5N1 influenza. Although overshadowed recently by the influenza A H1N1 2009 pandemic, the influenza A H5N1 virus continues to circulate among avian species and cause morbidity and mortality in man. The H5N1 virus is evolving, creating the potential for a new strain that is efficiently transmitted from person to person, while remaining highly lethal. Surveillance is essential to detect the spread of, and changes in, the virus. Laboratory testing is an important element of surveillance and patient management. The clinical microbiology laboratory has a number of diagnostic tools for detecting influenza viruses, including antigen detection, serology, virus culture, and nucleic acid amplification. The relative performance characteristics of these tests vary significantly. In addition, the sensitivity of tests may differ between influenza strains, including H5N1.

**Subjects:** 1. Diagnosis, Laboratory -- Methods  
2. Influenza A Virus, H1N1 Subtype, 3. Influenza,  
Avian -- Diagnosis



Constantino, B. T. (2011). The Red Cell Histogram and The Dimorphic Red Cell Population. *Laboratory Medicine*, 42(5), 300-308.

**Abstract:** The RBC histogram is an integral part of automated hematology analysis and is now routinely available on all automated cell counters. This histogram and other associated complete blood count (CBC) parameters have been found abnormal in various hematological conditions and may provide major clues in the diagnosis and management of significant red cell disorders. In addition, it is frequently used, along with the peripheral blood film, as an aid in monitoring and interpreting abnormal morphological changes, particularly dimorphic red cell populations. This article discusses some morphological features of dimorphism and the ensuing characteristic changes in their RBC histograms.

**Subjects:** 1. Anemia -- Diagnosis, 2. Blood Cell Count  
3. Erythrocytes -- Pathology

Yan, L., Rongbao, G., Wanfu, H., Mingying, M., Wei, W., Jun, H., & ... Yuelong, S. (2011). Detection of Highly Pathogenic Avian Influenza Virus H5N1 in Peripheral Blood Mononuclear Cells and Stool of a Patient. *Laboratory Medicine*, 42(5), 310-313.

**Abstract:** A fatal case caused by an H5N1 virus infection was investigated. In addition to serials of clinical chemistry assays, we tested the patient's peripheral blood mononuclear cells (PBMC) and stool by reverse transcription polymerase chain reaction (RT-PCR), real-time RT-PCR, and/or immunofluorescent assay. Our results suggested that PBMC can carry the virus and help the H5N1 virus spread to the human gut, resulting in infection with inflammation and viral discharge.

**Subjects:** 1. Influenza A Virus, H5N1 Subtype  
2. Influenza, Avian -- Diagnosis



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