

# ASCLS 2006 Annual Meeting: Official Abstracts of Submitted Papers and Posters

CHICAGO, ILLINOIS

The following abstracts have been accepted for presentation at the 2006 American Society for Clinical Laboratory Science (ASCLS) Annual Meeting and Clinical Laboratory Exposition to be held July 25 through July 29 in Chicago, IL. The preliminary meeting program was published in the Spring 2006 issue of *Clinical Laboratory Science*. Abstracts are reviewed by appropriate representatives of the ASCLS Abstract Review Committee. They are the final authority in selecting or rejecting an abstract.

Papers and posters will be presented during the following times at the annual meeting. Room assignments will be listed in the final program.

## ORAL RESEARCH AND CASE STUDY PRESENTATIONS

McCormick Place

Wednesday, July 26, 2006, 2:00 p.m. – 3:00 p.m. and 3:45 p.m. – 5:15 p.m.

## POSTER PRESENTATIONS

McCormick Place

Tuesday and Wednesday, July 25 and 26, 2006, 10:00 a.m. – 4:30 p.m.; Thursday, July 27, 2006, 10:00 a.m. – 12:30 p.m.

*Authors will be present on Wednesday, July 26, 2006 from 1:00 p.m. – 2:00 p.m. to discuss their posters.*

## ORAL RESEARCH PRESENTATIONS

### Are Quality Laboratory Services Related to Personnel Credentials?

*Maria D Delost PhD CLS (NCA), G Andy Chang PhD, Youngstown State University, Youngstown, OH; Teresa S Nadder PhD CLS(NCA), W Greg Miller PhD DABCC, William J Korzun PhD DABCC MT(ASCP), Virginia Commonwealth University, Richmond VA.*

Proficiency test (PT) performance provides an objective and consistent evaluation of laboratory quality. A retrospective review of existing PT results (2003) from six clinical laboratories in northeastern Ohio and western Pennsylvania was

conducted to determine the relationship of PT performance to the personnel credentials of the testing personnel. Predictor variables were the practitioner's major area of study, degree, certification, and years of laboratory experience. The sample consisted of 174 testing personnel and 11,233 valid PT results of which there were 11,120 results graded acceptable (99.0%) and 113 unacceptable results (1.0%). Technical problems were the most common type of error reported (35, 31.0%). Logistic regression analysis ( $n = 11,233$ ,  $\chi^2 = 20.416$ ,  $p = 0.002$ ) with all predictors included revealed that a clinical laboratory major was a statistically significant predictor of successful PT performance ( $p = 0.018$ ). Those individuals without a clinical laboratory major ( $EXP \beta - 2 = 1.820$ ) were almost twice as likely to produce an unacceptable result compared to those individuals with a clinical laboratory major. The study supports the hiring of laboratory personnel who have completed a formal clinical laboratory education program. Healthcare facilities should investigate the benefits of partnering with clinical laboratory education programs to maintain quality in the face of personnel shortages.

### Grade Inflation in Clinical Laboratory Science

*Shirlyn B McKenzie PhD CLS(NCA), Linda A Smith PhD CLS (NCA), University of Texas Health Science Center at San Antonio, San Antonio TX.*

The purpose of this study was to describe clinical laboratory science (CLS) students' GPAs in pre-professional and CLS courses over the period 1995-2004. University grading patterns have periodically come under fire because of perceptions of grade inflation. Although there is much anecdotal evidence, there is little empirical data showing that grade inflation is real. In this study, electronic surveys were sent to program directors of the 239 NAACLS-accredited CLS programs. There was a 41% (99) response rate. The survey asked for grade data for classes entering in 1995, 1999, and 2003. Data indicated that average GPA of admitted classes showed an upward trend between 1995 and 2003 with 26% having an average GPA > 3.25 in 1995 and 40% having an average GPA > 3.25 in 2003. Average GPA of the graduating class during this time remained stable in hospital-based programs. However, the percentage of university-based programs reporting an average graduating class GPA > 3.0

increased from 63% to 80%. Hospital-based programs had higher graduating class GPAs than university-based programs. Despite the increase in average admission GPA, < 25% of respondents thought students were better prepared for the CLS curriculum. Thus, there appears to be evidence of grade inflation in prerequisite courses and some CLS courses.

### Health Professions Workforce Partnership Can Be the Answer

*Barry Eckert PhD, Hassan Aziz PhD*, Armstrong Atlantic State University, Savannah GA.

With increased demand for clinical laboratory scientists, academic institutions are finding themselves facing a different and a unique challenge. Limited funds and constrained instructional resources such as number of qualified faculty and appropriate laboratory space are forcing educational administrators to seek opportunities outside the traditional operating methods. Armstrong Atlantic State University, together with three healthcare systems in the southeast region of Georgia, established a "Health Professions Workforce Partnership" for the purpose of assessing and responding to health workforce needs in the region. The partnership not only provides a mechanism for communication of current and projected workforce needs but also enables the university to respond through program enhancements. This process results in long term financial benefit to the healthcare systems and has allowed the university to expand its medical technology and other health professions programs. This poster will present the details of the partnership and will illustrate steps taken to establish and to maintain this project. With active audience participation, the interactive presentation will conclude with a focused question and answer discussion to explore the prospects and consider potential issues in structuring an ongoing collaborative effort.

### Medical Errors and Patient Safety: State Legislation and Recommendations

*Leticia J San Diego PhD CLS (NCA)*, Healthcare Management Development Center, Clinton Township MI.

The issue of medical errors and patient safety is of great importance to Michigan's Governor Jennifer Granholm and the legislature. A 1999 report by the Institute of Medicine showed that medical error is the eighth leading cause of death and biggest challenge in US healthcare. Public Act 119 was developed and signed into law to create a commission on patient safety. The legislation allows the governor to designate the Michigan Health and Safety Coalition to act as the commission to ex-

amine ways to improve patient safety and reduce errors. In an effort to improve patient safety in the state, the commission solicited testimonies and recommendations from the public, professional organizations including the Michigan Society for Clinical Laboratory Science, academia, stakeholders, and experts who are interested in patient safety. Recommendations included a system approach to emphasize that prevention not punishment is the best method, to create a culture of safety within organizations and non-punitive systems for reporting errors, and to establish performance standards for education, licensing and credentialing organizations, and training and implementation of patient safety systems. Diversified approaches and commitment among professional organizations and coalitions will strengthen implementation of initiatives in reducing medical error and provide directions in enhancing patient safety in Michigan.

### Methicillin-resistant *Staphylococcus aureus* in a Texas County Jail

*Rodney E Rohde MS SV (ASCP)*, Texas State University-San Marcos, San Marcos TX; *Marilyn Felkner DrPh, Ana Marie Valle PhD, Tamara Baldwin BA, LP (Sky) Newsome CHES*, Texas Department of State Health Services, Austin TX.

Methicillin-resistant *Staphylococcus aureus* (MRSA) in correctional facilities has garnered the attention of public health officials since 2000. This study assessed nasal carriage rate and strain-relatedness of MRSA among inmates incarcerated for fewer than two weeks in a Texas county jail using a cross-sectional design for surveying and obtaining nasal swabs and pulsed field gel electrophoresis (PFGE) to determine strain relatedness. Four hundred three (61.6%) of 654 inmates screened allowed questionnaires and nasal swabs to be collected. One hundred fifteen inmates (28.5%) carried *S. aureus*. Of the 403 inmates tested for nasal carriage of MRSA, 18 were positive for a carriage rate of 4.5% (95% CI = 2.7-7.1). PFGE identified ten different strains: four subtypes of each other, apparently USA300 (638, 703, 774, 776); two additional strains (775, 800) related to each other but not subtypes of the previous four related strains; and four strains, totally divergent from each other and from the other six strains (773, 799, 805, 772).

This is important because our data suggest that MRSA is endemic in persons coming into correctional facilities. Healthcare workers in correctional facilities should be prepared not only to prevent outbreaks through control of transmission within the facility but to treat MRSA infections that are unrelated epidemiologically arising from exposures prior to inmates' incarceration.

### Nutritional Assessment of Alzheimer's Patients Using Homocysteine, Folate, and Transthyretin Levels: Laboratory Identification of Alzheimer's Disease

*Eileen Carreiro-Lewandowski MS CLS*, University of Massachusetts Dartmouth, Dartmouth MA.

Routine identification of patients suffering from Alzheimer's Disease (AD) pre-autopsy consists of cognitive assessment, clinical symptoms, imaging studies, and assessment of functional abilities consistent with this type of dementia, often making early differential diagnosis difficult. As part of a clinical trial for therapeutic treatment of AD, 218 clients in assisted living facilities given a provisional diagnosis of AD by their primary care practitioner were initially selected. Each candidate's medical history was reviewed, and laboratory studies were performed as part of a qualifying physical examination. Participants were further divided based on co-morbidities and other trial exclusion criteria. As expected in an elderly population, there was an increased incidence of increased homocysteine and decreased folate levels. However, in those candidates meeting more stringent criteria for the larger trial, there was also an increased incidence of decreased transthyretin (pre-albumin) levels despite the fact that these clients have meal preparation as part of their care. This case study will review the findings of this data and discuss a possible future role the laboratory may have in the early identification of AD.

### Understanding of and Opinions about Licensure for Laboratory Personnel among Laboratory Professionals in the United States

*Tim R Randolph, MS CLS(NCA), Kathleen Solomon CLS(NCA)*, Saint Louis University, St. Louis MO.

The purpose of this study was to ascertain the current understanding of registration, certification, and licensure among laboratory professionals in the US and to determine their views regarding licensure of laboratory personnel. Several threats to laboratory medicine currently exist, upsetting the balance between supply and demand of laboratory professionals. Licensure is one strategy to address these problems. Four hundred thirty two surveys were sent to laboratory professionals throughout the US (72.5%) with a concentration in Missouri (27.5%). Surveys received (70.6%) represented mostly middle aged (63.7% over 40 years old), Caucasian (89.8%) females (83.4%) primarily employed in urban (61.6%) hospital (84.7%) laboratories. Although about half (49.1%) claimed a moderate degree of understanding about registration, certification, and licensure, only 16.9% correctly

indicated the number of states with laboratory licensure laws and 50.5% knew the number of other healthcare professions listed that had licensure in most US states. The majority of respondents (57.8%) were in favor of licensure with 19.1% opposed and 23.1% unsure. Nonetheless, 77.7% of respondents are willing to get involved with licensure initiatives at some level. Although there is confusion regarding registration, certification, and licensure, most laboratory professionals favor licensure and are willing to get involved even if unsure.

## CASE STUDY PRESENTATIONS

### Importance of Patient History in a Case with Antibody to High Frequency Antigen

*Christina Thompson, EdD CLS(NCA)*, Texas A&M University-Corpus Christi, Corpus Christi TX.

A 55-year-old female with a history of anemia was admitted to the hospital for elective surgery. A crossmatch for two units of blood was ordered. The patient tested as O positive with a positive antibody screen at the antiglobulin phase only. All panel cells and units of blood crossmatched were also incompatible at the antiglobulin phase. The patient had not been previously transfused at this hospital and the patient's history did not indicate previous antibody problems. The sample was sent to a reference laboratory and the antibody was identified as anti-Di<sup>b</sup>. After the antibody was identified, the laboratory supervisor informed the doctor of the problem and was informed that the patient knew about the Diego b antibody. The patient was transfused with compatible Diego b negative cells. Although the Diego b antigen is a high frequency antigen, the Diego b negative phenotype is found in increased numbers in the Mexican American and southwest Native American population and occasionally the patients are cognizant of their antibody problems. A recent study also indicated an increased incidence of the Diego a antigen in donor population and anti-Di<sup>a</sup> in previously transfused patients.

### Transfusion-related Bacterial Sepsis

*Linda A Smith PhD CLS(NCA), Yvette Esparza BS*, University of Texas Health Science Center, San Antonio TX.

Transfusion-related bacterial sepsis is most commonly associated with the infusion of contaminated platelet concentrates. However, contamination of packed red blood cells (PRBC) can also cause this type of transfusion reaction. In cases of

contaminated PRBC, the causative organism is usually a gram-negative rod capable of growing at 1 °C - 6 °C. This case presentation is that of a 60 year old male who was admitted for chronic anemia and complications of femoral bypass surgery. Two units of PRBC were ordered. During the infusion of a unit he developed shaking chills, elevated pulse rate and blood pressure, and a temperature spike to 103 °F. Investigation of the reaction revealed no clerical or patient identification errors or serologic incompatibilities. The initial Gram stain of the unit demonstrated no bacteria. However, culture of the unit grew an organism subsequently identified as *Serratia marcescens*. Despite treatment, the patient expired two days after the incident.

## POSTER PRESENTATIONS

### An Atypical Antibody Event

*Paula M Szuflad MS MT(ASCP)SBB, Alan Weiner BS, VA Boston Healthcare System, West Roxbury MA.*

A surgical patient presented for compatibility testing. Results showed a positive antibody screen (AS) and direct antiglobulin test (DAT) negative, consistent with prior results. Four units of compatible red cells were transfused over a period of nine days. On the tenth day after the first transfusion, the patient's hemoglobin dropped from 11.2 g/dl to 9.3 g/dl, and two units of red cells were requested. At this time, the patient demonstrated a positive AS (2+ reactivity at AHG) and DAT (2+ with anti-IgG). Anti-M was identified in both the serum panel and the eluate. The patient's pre-transfusion sample tested negative for the M antigen. Two of the four units transfused were confirmed positive for the M antigen. Anti-M is typically found as an IgM class antibody, reactive at room temperature. There are few reported cases of this antibody being involved in delayed transfusion reactions. It is likely that this patient had a pre-existing anti-M that was not detected and that it was re-stimulated by transfusion. The patient subsequently was transfused with two units of M negative, cross-match compatible red cells without incident. Eight days after the antibody was identified, the patient's AS and DAT reverted to negative.

### Are Different Tests of Platelet Function Comparable When Taking Aspirin?

*David L McGlasson MS, Michael Chen MD, Z Knight, M Dobbs MD, Wilford Hall Medical Center, Lackland AFB TX.*

The purpose of this protocol was to study platelet sensitivity to aspirin (ASA) resistance with four assays using single doses

of ASA. Whole blood (WB) platelet aggregometry was run using collagen and arachidonic acid (AA) as agonists. The PFA-100 system using EPI/COLL cartridges and an Accu-metrics instrument with AA cartridges measured ASA resistance. An ELISA urine method measured the level of urine 11-dehydrothromboxane (11-DHT) in pg/mg creatinine. Fifty normal subjects who met the inclusion criteria were consented into the study. Blood and urine were obtained at baseline and then each subject was given an 81 mg enteric-coated ASA. Twenty-four hours later blood and urine specimens were recollected. In two weeks the process was repeated with a single dose of 325 mg enteric-coated ASA. The results in percent resistance to both concentrations of ASA are as follows:

DOSE ASA	WB Collagen	WB AA	PFA EPI/COLL	ACCUMETRICS AA	11- DHT
81 mg ASA	74.4%	79.6%	77.0%	83.6%	51.1%
325 mg ASA	28.2%	11.6%	19.1%	14.5%	16.7%

There were no statistical or clinically significant differences between the WB assays at either dose of ASA. However, the urine 11-DHT was more sensitive at 81 mg ASA. There were no clinical differences evident in all assays at 325 mg ASA.

### β-2-Microglobulin Compared with Thirteen Other Tumor Antigens for the Serodiagnosis of Pancreatic Cancer

*Margot Hall PhD FAIC FACB FRACI CChem (MRSC) CPC, Sabrina Bryant, MS MT(ASCP) CLS(NCA), James T Johnson PhD, Slobodanka D Manaceva PhD, Paul Sykes MD PhD, Margaret Jackson PhD MT(ASCP), Harold Schultze MS, Rasheeda Crowell, Tammy Sims-Davis, Sharae Johnson, Mary Guo, Wileen Cooksey MT (ASCP), CLS(NCA), Shawn Clinton, MT(ASCP) CLS(NCA), Kevin Beason MT(ASCP) CLS(NCA), Debbie Fortenberry MT(ASCP) CLS(NCA), Cynthia Bright MS, Helen Hua MS MT(ASCP), Jiarong Ying MS MT(ASCP), University of Southern Mississippi, Hattiesburg MS; Kay Hollifield MT(ASCP), Charlton Vincent MD, Laurel Clinic for Women, Laurel MS; Cynthia Wilson MT(ASCP), University Medical Center, Jackson MS.*

The purpose of this study was to compare β-2-microglobulin with 13 other tumor antigens for diagnostic efficacy in pancreatic cancer. With 32,180 new cases and 31,800 deaths estimated during 2005 and an insidious onset, pancreatic cancer is an important pathology in the USA. A non-invasive, early diagnostic method is urgently sought and tumor antigens have been used for diagnosis. Sera from 554 patients (16 pancreatic cancer, 343 other cancers, and 195 non-can-



cer) were assayed for the presence of tumor antigens and the results correlated with diagnoses established pathologically. Immunoassay test kits from Diagnostic Automation ( $\beta$ -2-Microglobulin, NSE, Ferritin, CA242), Hybritech (CEA, CA195), Centocor/Fugirebio Diagnostics (CA125, CA19-9, CA72-4, CA15-3, CA27.29, Cyfra21-1), CIS Biointernational (CA50), and Abbott (AFP) were used to test for the concentration of these antigens. Using the manufacturers' decision values the following diagnostic sensitivities were obtained:  $\beta$ -2-microglobulin 50.0%, NSE 0.0%, Ferritin 50.0%, CEA 37.5%, CA19-9 66.7%, CA195 100.0%, CA50 66.7%, CA242 66.7%, CA72-4 31.3%, CA125 40.0%, CA 15-3 26.7%, CA27.29 40.0%, AFP 18.2%, Cyfra21-1 26.7%. Diagnostic specificities were > 75%. We concluded that  $\beta$ -2-microglobulin was inferior to CA195, CA19-9, CA50, CA242 but equal or superior to all other markers studied for pancreatic cancer.

#### **Clinical Laboratory Sciences Curriculum Re-development: An Application of Change Theories**

*Lillian Mundt MHS CLS(NCA)SpH MT(ASCP)SH, Janet Vanik MS MT(ASCP)*, Rosalind Franklin University of Medicine and Science, North Chicago IL.

*Problem and reasons for investigating.* Closure of MLT programs has lead to a decline in the availability of associate-degreed applicants. Most prospective students hold an undergraduate degree and express interest in obtaining entry-level skills but desire a higher degree. In 2005, the CLS department awarded no Bachelor's degrees, with no hope of reversing this trend. Change was imminent in order to guarantee the department's survival.

*Method.* The faculty employed multiple models to implement a productive change process. Traditional models no longer served the department's needs, therefore a transformational model was used. Transformational change includes visioning, market focus, and involving all stakeholders.

*Result.* The result of this process is the entry-level MS CLS degree (ELM). Offering this program increased enrollment in the CLS department from seven (BS level) to 18 students for the 2005-2006 academic year. All additional students entered the ELM program. The projection for the 2006-2007 academic year is 23 new students.

*Conclusion.* The CLS faculty recognized external and internal change forces that drive the need for change, applied appropriate change models to implement change and overcome

barriers, and transformed the CLS curriculum. The creation of the entry-level masters has saved the CLS department from extinction.

#### **Diagnosis of Invasive Pulmonary Aspergillosis: Molecular vs. Culture**

*Ryan D McGough MT(ASCP)*, University of Cincinnati, Cincinnati OH; *Deborah Josko PhD CLS(M), SM(ASCP)*, University of Medicine and Dentistry of New Jersey, Newark NJ.

*This work was done to fulfill a course requirement at the University of Medicine and Dentistry of New Jersey.*

Invasive Pulmonary Aspergillosis (IPA) is of particular interest to physicians treating immunocompromised and immunosuppressed patients due to its complicated diagnosis and high mortality rates from inadequate treatment. Because of inherent complications with IPA diagnosis from bronchoalveolar lavage (BAL) fluid specimens, and the toxic effects of prophylactic anti-fungal therapy, quicker and more efficient diagnostic methods are necessary. This review focuses on studies that directly compare molecular methods of fungal detection (such as PCR) in BAL fluid to culture, radiograph, computed tomography, and other traditional diagnostic methods in an effort to determine whether sufficient evidence exists for molecular methods to replace these methods in IPA diagnosis from BAL specimens. Several databases were searched and 12 articles were retrieved which passed defined inclusion and exclusion criteria. The results analyzed in this review indicate that many of the intrinsic advantages of molecular based assays, like extremely high functional sensitivity, actually acted to decrease the clinical utility of many of the assays because of problems with contamination and colonization. Thus, to date, sufficient evidence does not exist for molecular methods to replace traditional diagnostic methods in suspected cases of IPA.

#### **The Effect of Ozone on Common Environmental Fungi**

*William J Korzun PhD, Jeffrey M Hall MS, Ronald L Sauer MA*, Virginia Commonwealth University, Richmond VA.

Fungal contamination of occupied buildings can cost building owners large sums of money to remediate and can contribute to a condition referred to as Sick Building Syndrome. One potential form of building remediation is treatment with ozone. This study was designed to test the null hypothesis that there is no significant difference in viability between fungal spores treated with ozone and fungal spores not treated with ozone. Freshly prepared suspensions of *Cladosporium spp.*,

*Stachybotrys spp.*, and *Aspergillus niger* spores were diluted and plated onto the surface of solid agar plates. The plates were exposed to room air or to different concentrations of ozone for up to four hours, as were uninoculated plates. All plates were then incubated at 25 °C until quantitative colony counts could be performed. There was a significant ( $p < 0.05$ ) decrease in viable spores of all three fungi, at ozone concentrations of 5.0 – 12.8 parts per million, by four hours of exposure. However, in every case, some spores remained viable even at the highest level of exposure. These data suggest that ozone must be used in conjunction with other methods of remediation in order to eliminate fungal contamination of buildings.

#### **Improved Rapid Fluorescent In Situ Hybridization Protocol for Testing of Newborns for Possible Chromosomal Aneuploidy**

*PA Lennon PhD CLSp(CG), P Hu MS CLSp(CG) CLSp(MB)*, University of Texas MD Anderson Cancer Center, Houston TX; *SW Cheung FACMG, A Patel FACMG*, Baylor College of Medicine, Houston TX.

It is often desirable to rapidly determine if a newborn in the NICU is suffering from one of the more common chromosomal aneuploidies, such as trisomy 13 and 18 (or their mosaicisms), by performing FISH on cultured blood cells or directly on a blood smear. Blood smears, however, cause cells to lie upon one another or especially to fold, causing the fluorescent signals to lie in differing depths of field, leading to error. We present a rapid blood FISH technique for use with the Aneuvysion (Vysis: Des Plaines, IL) kit for chromosomal aneuploidies of chromosome 13, 18, 21, X, and Y. We use the hypotonic and cell fixation solutions of conventional cytogenetic blood culture harvest on fresh uncultured blood in a 1.5 uL Eppendorf tube. This allows white blood cells to swell and their DNA to spread, and allows the cells to be dropped onto a slide flat, reducing cell folding. Our technique also increases probe hybridization from 37 °C to 42 °C, so that the locus specific probes for 13 and 21, which usually require six hours for hybridization, can hybridize in only two hours. Turnaround time from sample receipt to reporting is less than five hours.

#### **Integrated Metabolism and Low Carbohydrate Dieting**

*Lester G Pretlow PhD CLS(CC) NRCC(CC)*, Medical College of Georgia, Augusta GA.

The enzymatic and regulatory controls of low carbohydrate dieting have been misunderstood. The reason for this investi-

gation was to explain the biochemistry and physiology of low carbohydrate dieting by presenting the key regulatory points of integrated metabolism. Integrated metabolism is defined as the sum of the metabolic pathways required to produce life sustaining energy in the form of ATP. An extensive literature review of the current understanding was conducted and compiled. The investigation addressed the regulation of hormonal control and the enzymatic (allosteric) controls of glycolysis, gluconeogenesis, glycogenesis, glycogenolysis, lipogenesis, and lipolysis. Additionally, hormonal and metabolic processes impacted energy consumption at specific organs – such as brain, muscle, liver, and adipose tissue. The results of this investigation showed that recidivism, the tendency of individuals to regain weight, suggested that adipose tissue may in fact regulate itself through the secretion of leptin, a protein important in regulating body weight, metabolism, and reproductive function. A low carbohydrate environment inhibited lipogenesis. Also, exercise and the utilization of glycogen stores versus lipolysis had different effects on fast-twitch and slow-twitch muscles. In conclusion, this investigation demonstrates that understanding the controls of integrated metabolism can provide knowledge for maintaining health and weight.

#### **An Introductory Pathology Course in a Medical Technology Curriculum**

*Beverly A Kirby MA*, West Virginia University, Morgantown WV.

Medical technology students tend to be detail-oriented. Although this characteristic is essential for performing laboratory work, it presents a challenge to medical technology educators who must ensure that the students assimilate and integrate voluminous factual information into a “big picture”. They must also develop the critical thinking skills that allow students to interpret data and apply it clinically and to be aware that every specimen represents a person. The West Virginia University medical technology program developed a new course, Introduction to Pathology, as a foundation course to encourage the students’ ability to integrate and apply information from all of their coursework. Twenty-seven medical technology students were enrolled in the class the first semester of their junior year. Twenty-four dental hygiene juniors and eleven athletic training seniors also participated in the course, adding an interdisciplinary component. The course was taught by medical technology faculty. Course evaluation included questions rated on a Likert scale. The responses of more than 90% of the class indicated strong agreement that the course helped integrate knowledge from other courses, provided a good foundation for future courses, and was helpful in promoting basic understanding of the body in health and disease.

### Investigation of Knowledge and Attitudes of African American High School Students toward Clinical Laboratory Science

*Lynda Britton PhD CLS(NCA), Karrie Hovis MHS CLS(NCA), David Irwin PhD, Louisiana State University Health Sciences Center, School of Allied Health, Shreveport LA; Louann Lawrence DrPH CLS(NCA), Louisiana State University Health Sciences Center, School of Allied Health, New Orleans LA.*

Currently, there is a shortage of minorities in the health professions and a shortage of clinical laboratory science (CLS) professionals. In their strategic plan, the Coordinating Council on the Clinical Laboratory Workforce recommended recruiting middle and high school students into the CLS profession. A web-based educational module, LabPartners, was designed and tested in New Orleans to recruit middle and high school students into CLS (Haun, Leach, Lawrence, Jarreau, in press). This study tested the knowledge and attitudes of low socioeconomic African American high school students toward clinical laboratory science using the LabPartners module. Twenty-four low socio-economic African American high school students were in both the experimental and control groups. Each group was tested for prior knowledge and attitude toward CLS. The experimental group was presented the web-based instructional module and tested for post knowledge and attitudes. We found a statistically significant difference in the subjects' knowledge of CLS ( $p < 0.05$ ) but not in their attitudes towards the CLS profession ( $p > 0.05$ ). The LabPartners educational module is a useful tool for exposing students of different ethnicities to CLS but may not be sufficient to influence their career choices.

### Overcoming Obstacles to Incorporate Interdisciplinary Curriculum into a Graduate Laboratory Science Program

*Lorraine Doucette MS CLS(NCA), Karen Gordes DScPT, Fran Huber EdD PT OCS, Lisa Steinberg MS CGC, Shannon DeLany MS CGC, Stephanie Ashley MS CGC, University of Maryland School of Medicine, Baltimore MD.*

Clinical laboratory science, genetic counseling, and physical therapy educators initiated a didactic and clinical program for their allied healthcare students to become members of interdisciplinary teams and to promote each profession to the general public and to other healthcare professionals. To accommodate scheduling needs, the final didactic product was an online three credit modular course for graduate clinical laboratory science, genetic counseling, and physical

therapy students. The course module content consisted of: Introduction to Interdisciplinary Care, Multicultural Care, Medical Ethics, Healthcare Regulations, Bioterrorism/Natural Preparedness, Health Promotion, Disease Prevention, Public Health, Geriatric Health Issues/Community Resources, Geriatrics – Home Health, LTC, Hospice, and Case Studies. The benefits of the course were to learn the module content in an interdisciplinary context and to participate in interdisciplinary wellness fairs hosted for the underserved/underprivileged population in Baltimore, Maryland. The results of our efforts are that the team encountered several barriers in their efforts for curriculum development such as sensitivity to different value systems for each discipline, scheduling conflicts, and faculty resistance. As the wellness fairs are still ongoing, outcome assessment measures of student learning are currently in the data collection process and results are pending. Our team has recommendations for future endeavors of interdisciplinary curriculum development.

### A "Proficiency Assessment Process" for Clinical Hematologists

*Linda C Beck PhD MT(ASCP), Kimberly Rainbow Parra MS MT(ASCP) CLS(NCA), Virginia Commonwealth University/Medical College of Virginia, Richmond VA.*

Training and proficiency assessment of new employees in the performance of the manual leukocyte differential is a challenge faced in the clinical hematology laboratory. The test's complexity and interpretative nature, combined with the current shortage of job applicants holding degrees and/or certifications in clinical laboratory sciences, augments this challenge. Little published guidance is available on the subject of proficiency testing tools. The intent of this project was to develop a "proficiency assessment process" that is more applicable for use in the current laboratory workforce environment. The process consists of a two tier evaluation system, ensuring proficiency in normal morphology before progressing to tier two, abnormal morphology evaluation. Tier one was developed and contains ten peripheral blood smears of normal morphology, with corresponding case histories and related study questions. An answer key was developed by four "expert" hematologists and the results formulated into graphs. Ten employees with fewer than two years experience participated in the project. They plotted their results for a visual representation of their competency. A questionnaire was completed to evaluate the effectiveness of the tool. In conclusion, the rating for the proficiency assessment tool was positive and the answer key graphs worked well for the intended use.

### Urinary 11-dehydrothromboxane B2 Levels in Healthy Individuals Following a Single Dose Response to Two Concentrations of Aspirin

David L McGlasson MS, Michael Chen MD, Z Knight, M Dobbs MD, Wilford Hall Medical Center, Lackland AFB TX.

The purpose of this protocol was to determine the aspirin (ASA) effect on urinary 11-dehydrothromboxane B2 levels (11-DHT) in normal individuals who ingested a single dose of aspirin. Fifty normal volunteers over 18 years of age that had not ingested aspirin or other NSAIDs for 14 days were enrolled in this study. Each subject had a baseline urine specimen obtained and was then given an 81 mg enteric-coated ASA. Twenty-four hours later a second urine was obtained. Two weeks later the process was repeated with 325 mg enteric-coated ASA. Platelet function was assessed using an ELISA 11-DHT kit. Aspirin response was established by determining a 50% difference of the levels of 11-DHT from baseline and 24 hour specimens with both concentrations of ASA. Twenty-two of the 48 subjects of the 81 mg ASA group showed ASA sensitivity (46%). Forty of the 46 (85%) of the subjects that finished the 325 mg dose displayed an ASA response. The 325 mg ASA dose shows a significantly greater platelet response sensitivity. Previous studies have shown that non-responders to ASA have a greater risk of cardio-vascular problems. However, do we know if normal subjects taking ASA are protected?

### Young Adults' Perceptions of an Ideal Career and a Career in Medical Laboratory Science

Christine G Griffin MS MT(ASCP)SH, Mary Val Palumbo DNP APRN, University of Vermont, Burlington VT.

The purpose of this study was to explore young adults' perception of an ideal career compared to a career in medical laboratory science in order to develop an effective recruitment campaign in the state of Vermont. Many strategies are currently needed to address the shortage of competent medical laboratory scientists. Subjects were invited to participate at various locations throughout Vermont. All 720 subjects, ages 18 to 24, completed the ideals career section and of these 720 subjects, 120 subjects also answered questions specifically about a career in medical laboratory science while the remainder answered questions about five other healthcare careers. The instrument developed by May and others (1991) measures 18 items on a five point Likert scale and has been tested for reliability in previous studies. The significant differences found between ideal and medical laboratory science careers were appreciation, respect, job security, and a safe workplace. Characteristics most important to an ideal career were respect and appreciation, whereas the respondents identified that "using your brain", "knows a lot", and "working with high technology" most strongly described a medical laboratory science career. The findings of this study suggest a recruitment campaign that highlights a medical laboratory scientist as a respected and appreciated professional.

## 2007 Annual Meeting Abstract Deadline

The deadline for abstracts for oral or poster presentations of research or case studies at the 2007 ASCLS Annual Meeting is January 15, 2007. Submission instructions and the proposal form may be found at [www.ascls.org/conferences](http://www.ascls.org/conferences). The completed proposal form and abstract must be submitted electronically by the deadline.

The 2007 Annual Meeting will be held July 17-21 in San Diego, California. Additional meeting information will be available at the ASCLS Conferences webpage.