A world-class lab accommodates worldwide service

Armed Forces Institute of Pathology lab is chosen as MLO’s 2006 winner

By Carren Bersch, Editor

Each year, MLO sponsors a friendly competition among laboratories in conjunction with National Medical Laboratory Professionals Week. A three-judge panel selects a winner, a first runner-up, and a second runner-up from among the nominees. Our April issue presents these three winning laboratories to MLO readers in this very brief summary of some of their community support and team activities aside from their outstanding lab work. To each of these — and to all nominees — congratulations on bringing high quality and outstanding performance to America’s laboratories.

A military medical laboratory is the winner of MLO’s Medical Laboratory of the Year 2006 Award — a first in the annual competition. SMSgt. Jon Shane, MT(ASCP), who nominated the Department of Forensic Toxicology at the Armed Forces Institute of Pathology (AFIP-FT) in Rockville, MD, said upon receiving notice, “When the excitement calms down here, we plan on writing an article during lab week on our award.” And there is much for them to write about.

The AFIP-FT caters to a worldwide customer base ranging from U.S. medical centers to remote staging sites in Iraq, South Korea, England, and Panama. Last year, its staff furnished medical-support services for shipments from over 1,160 separate global sites. Because of Operations Enduring Freedom and Iraqi Freedom, the AFIP-FT workload increased from an annual average of 5,800 case submissions to slightly over 10,000 — the largest number in the lab’s history. Concurrently, the number of individual lab-testing procedures conducted on each sample increased due to the use of high-speed analyzers and the addition of sensitive and specific immunoassays for various analytes. And Shane says, “We serve as the reference laboratory for many analyses and are looked to for the unusual or rare analysis not performed within the commercial sector.”

The original comprehensive analysis for drugs and poisons in post-mortem samples was developed at AFIP-FT in the 1960s. The first publication dealing with the identification of a metabolite of marijuana was developed there in the 1980s. The laboratory’s work involves areas of national interest — to include the Columbia Space Shuttle crash and the Pentagon 9/11 air crash — and plays a key role in all members of the military and civilian community who are killed in the global war on terrorism. Its personnel are called upon to support other federal agencies in drug analysis to include the Federal Bureau of Investigation (FBI), the Central Intelligence Agency (CIA), and the State Department. In addition, lab personnel routinely receive numerous requests to develop a method, test, and then interpret the findings for novel drugs (i.e., amylmethyl tryptamine, Salvia divinorum, morning glory seeds, and psilocin).

Obviously, this lab is not one-dimensional; its personnel also work locally with the District of Columbia medical examiner, and support testing for the National Park Service Police of the Capital Region, Capital Police, and other local and federal agencies as may be requested.

A mission to accomplish

AFIP-FT has an ever-changing rotation of personnel (includ-

 ing PhD-level bringing new ideas and practical application of technologies) from three U.S. military service branches and a core support staff of contract and civilian employees. With its 42 personnel, the AFIP-FT mission gets done. Not only is its team able to expand services but also to set new standards in its annual number of cases, increase the number of instruments available for testing use, and achieve the fastest turnaround time (TAT) ever seen — for most results, within 96 hours or less. “Our biggest advantages in this field of medicine,” brags Shane, “are that we have the latest gas chromatography instrumentation, brilliant staff members, and a testing time with confirmation TAT that a normal civilian forensic toxicology agency would die for.”

 A key area of operation, the Post-Mortem and Human Performance Testing Laboratory, contributes expert witness consultation and testimony in support of legal proceedings for all military branches. These experts work closely with providers and other medical professionals to ensure information is correctly interpreted. For military customers, expert witnesses are sent worldwide to every base, post, site, or field tent that needs AFIP-FT service, and they only charge the basic fee to travel to a local courtroom for civilian agencies they are representing. While AFIP-FT’s result TAT for drug testing fell from seven days to 2.8 days in the past 12 months, use of litigation support has tripled.

 Extensive, far-reaching submissions

 The AFIP-FT covers many different areas of the laboratory field: ensuring quality assurance oversight for the eight Depart- ment of Defense (DoD) sites, six of those tri-service DoD forensic drug testing labs; conducting extensive ongoing research to determine the metabolites of known drugs of abuse and identify new ones; detecting newly emerging dietary and nutritional supplements with underlying morbidity, other illegal substances potential abuse, or misuse of prescribed medications; as well as testing samples in the human performance lab.

 There, toxicological case submissions arrive from military contributors worldwide and include analysis of biological specimens from military aircraft fatalities; military autopsies; command-directed fitness-for-duty investigations; criminal investigations from Naval Criminal Investigative Services, Army Criminal Investigation Division, and Air Force Office of Special Investigations; DUI/DWI medicolegal determinations; and non-fatal air-, ground-, and sea-mishap investigations. Submissions from these sources have increased to over 5,000 cases annually, a 40% increase since CY2000. Post-mortem case submissions, which require the maximum number of testing panels, have risen 170% since CY2000.

 Customer analytics is a key role for the AFIP-FT. In-house customer service rests with six individuals who give immediate response results via fax, telephone, e-mail, or scanning methods with proper “need-to-know” authorization. Daily phone calls come from ships based in the Indian

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Ocean, to sites in the middle of nowhere, to nearby medical centers asking about collecting a blood sample for analysis or results. The lab's answers directly reflect the way the war on terrorism is handled, since tank drivers, pilots, and ship captains can be grounded or relieved from duty until testing results are released. This can have an immediate negative impact on troop morale or on their ability to carry out their mission.

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The ongoing war on drugs

With oversight for all DoD drug-testing labs, AFIP-FT plays an important role in the nation’s war on drugs and has been critical to developing and validating new and improved methods for identifying drugs of abuse. Requests for detecting illegal drugs in the body come from all military branches, the FBI, the CIA, and the National Aeronautical and Space Administration, to name a few. For these tests, the need for perfection first time, every time, cannot be stressed enough; they must be performed at a specific time and location and cannot be done “later.” The lab also monitors drug trends with input from the legal community, criminal investigations, and base commanders, which directly relates to what is tested and how, and how often and how low to set the testing sensitivity needs.

In addition to routine analyses, a primary mission of this lab is to produce toxicological testing for emerging drugs of interest and non-standard compounds in support of the Office of the Armed Forces Medical Examiner and military investigations. This involves development of numerous analytical methods for many compounds, including nutritional supplements, designer amphetamines, tryptamines, psilocybin, suspected agents in sexual assault cases, and other psychoactive compounds. One of AFIP-FT’s major achievements last year was to work directly with the Drug Enforcement Agency to change the way in which the drug “absinth” in liquor and the effect of “poppy seeds” in foods is reviewed.

The lab’s chemists, using a wide variety of instrumentation to include 25 gas and liquid chromatography-mass spectrometry (GC/LC/MS), quickly develop methods for isolating and identifying compounds as diverse as fentanyl, lysergic acid amide (morning glory seeds), mescaline, ketamine, and mushrooms (psilocin).

A multitiered level of testing was established to ensure the detection of drugs, regardless of the biological matrix submitted. The new instrumentation permitted the launch of specific screening procedures for heroin metabolites, oxycodone and oxymorphone, methadone, methadone metabolite, and LSD. AFIP-FT’s rape-crisis testing panel also expanded to include volatiles (huffing); acid, basic, and neutral classes of drugs by GC/MS; and an expanded drugs-of-abuse panel to include ketamine, flunitrazepam, and the club drug, gamma-hydroxybutyrate or GHB.

The average turnaround time for case reports averaged less than two days for negative results and 5.4 days for positive results. Further, many of the analyses requested do not have commercial screening assays and require non-automated, more complex laboratory procedures for the unusual testing for specific drugs such as designer methoxy-analogue drugs of abuse.

Top-notch teamwork adds up to perfect inspections

During 2005, the AFIP-FT passed three large inspections: the College of American Pathologists with zero discrepancies; the American Board of Forensic Toxicology with zero discrepancies that moved AFIP-FT into an elite group of only 17 certified facilities nationwide and the only one in DoD; and finally, its exceptional Greystone account inspection, which looks at the specimen process on the counter-narcotic side of the house.

Says Shane, “Teamwork is our middle name, but this team could be called the ‘Military Melting Bowl.’”
Big changes come to Big D

Dallas will not be the same after MLO’s Runner-Up celebrates this win. After 30 years of providing contractual customer service, Medical City Dallas Hospital and Laboratory handled daily responsibilities during its 2005 transition from contract service to hospital department — coupled with lab expansion and in concert with administrative and managerial change. Eighty-two lab employees stayed rather than depart with the contractor. The lab restructuring often required longer workdays or inconvenient schedules. Despite morale-busting obstacles, by the third quarter, a 32% increase was noted in those who expressed job satisfaction. Morale-boosting solutions were wage equity adjustments, a new break room, state-of-the-art technology, and continuing education through a Web-based program that keeps techs abreast of the latest developments in their specialties.

**Surprise cost reduction**

Teamwork eliminated upheaval during the prolonged renovation and expansion. Supervisors worked closely with technicians to arrive at optimal floor plans, resulting in an efficient, streamlined lab for $350,000 — down from projected construction costs of $1.5 million (a 77% decrease in construction costs). Improved efficiency can be seen in the restructuring of departments within the available space.

Microbiology is now adjacent to Specimen-Receiving’s front desk with a window that allows Micro techs to monitor the desk for possible blood or tissue-culture specimens, facilitating the triaging of critical specimens.

Technicians uncomplainingly acquiesced to changing work schedules in order to improve patient care and physician satisfaction.

A Lean project focused attention on structuring, space design, and formatting of new instrumentation in order to allow the least resistant workflow. In just the last six months, the number of STAT tests completed within the 30-minute target TAT has increased to 77%. The expansion of the hospital-wide tube system saw STAT specimen-delivery time increase; nearly 53% of specimens now arrive in the lab within the recommended 10 minutes.

New technology being debuted has bar-coding capabilities to help speed up processes and decrease technician errors.

By exploring their chemistry system’s capabilities, lab personnel incorporated many tests once sent to reference labs, saving $46,000 annually. Histology’s new automated special stainer/immunostainer places control and patient tissues on the same slide; more cases are stained in each run and TAT for surgical pathology cases decreased. PCR testing for MRSA

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strains has greatly benefited the hospital's infection control. For a year, Hematology has performed thromboelastography on cardiac surgery patients and has shown evidence of a significant reduction in products transfused during and after surgeries.

Outsourcing the lab's blood bank to a local transfusion service — in combination with revised work schedules, more efficient labor distribution, better workflow, and early implementation of benchmark tools — has already resulted in a 22% increase in productivity. Throughout all of this change, not one of the laboratory investigations performed at Medical City Dallas to date has identified QC lapses. Even a two-day, unannounced CMS inspection performed last year failed to uncover any deficiencies.

Creative scheduling and other innovations

Technicians uncomplainingly acquiesced to changing work schedules in order to improve patient care and physician satisfaction. The morning phlebotomy team now shows up at 3 a.m. rather than 4 a.m. so that more test results are available by 7 a.m. Ancillary departments show up earlier to calibrate and ready instruments for test runs as soon as samples arrive. This teamwork resulted in a 43% improvement in the number of tests completed for 7 a.m. physician rounds. Lab employees also attend monthly hospital meetings and have become well versed in 12 service-excellence standards. The result? Within eight months a 7% increase was noted in the number of patients who felt “very satisfied,” and the number of inpatients “satisfied” or “very satisfied” with lab services during their hospital stay rose to a record 97%.

All work and no play

According to Nominator Jo Ellen Krueger, MD, the lab raises funds each year for local charities by raffling off its gift baskets to hospital employees. The net result has been a 400% increase in the donations from 2003 ($800) to 2004 ($4,000), to 2005 ($6,098). Many on the lab team take part in other public charitable causes; volunteer at the Dallas Art Festival or the van Cliburn competition; pursue religious activities, political interests, or participate in activities with their children; or volunteer at local free health symposia.

Build a team; grow customer satisfaction

In Minocqua, WI, Xhemile Heidenreich received word that her nominee — the Lakeland Center Laboratory of Marshfield Clinic — had been named 2nd Runner-Up in this year’s competition. A summary of Heidenreich’s nomination is not easy, but its inspection scores speak volumes: COLA 2004 inspection was 99.05%, and COLA 2002 inspection was 98.81%. Lakeland adopted Values in the Workplace. The lab staff acquired a motto, “Together Everyone Achieves More” (“TEAM”), which is reflected in the staff’s positive outlook. When one member needs assistance, help is always offered. Every lab team member is involved in a “work group,” through which systems are evaluated. The work group meetings also includes technical managers, PhDs, and general technologists from Marshfield Clinic whose sole purpose is to share ideas, distribute changes, and to help lab personnel see things from “outside of the box.”

Lakeland Center Laboratory is split into the technical area where specimens are analyzed and the phlebotomy area where specimens are collected. Through teamwork and work groups, Lakeland’s lab staff has pioneered many initiatives. Lean principles streamlined processes and eliminated some non-value-add steps. In September 2004, the lab began tracking collection-to-result turnaround time for lab draws on all labs, regardless of status. Initially, TAT varied from STAT reporting in about an hour to routine reporting by the end of the business day. The lab now reports commonly ordered tests within a 60-minute TAT, regardless of sample status. Patients can now check into the lab just before their physician appointments. This allows for immediate follow-up on lab results and for any questions to be answered in timely fashion.
High tech and high hats

Instrumentation QC is performed daily; systems QC is conducted on a periodic basis. A quality assurance plan checks the lab’s turnaround times; properly documents called critical values and amended reports; ensures proper specimen labeling; and tracks specimen problems. A quarterly staff rotation means that, at some point, all lab personnel are involved in these checks and know how to follow-up appropriately. Wearing different hats allows staff members to cover more than one area on any given day.

For example, the experienced Lakeland phlebotomists can deal with the most difficult draws. Its members also perform venous access device draws and get quick test results in order to allow chemotherapy to be administered as soon as a patient gets to the clinic’s oncology area. Phlebotomists serve as support staff for specimen processing, too. Lakeland has increased services without increasing staff or space, yet the number of venipunctures has gone from 2% to 4%, year after year.

Crucial to the lab’s improved, increased services is its instrumentation, which is interfaced with an excellent computer system and specimen-tracking system. The lab also uses a computerized medical record with immediately available documentation, which quickly gathers information for fast answers to any questions.

The lighter side

Members of the lab are prepared with photographs of Gram stains and peripheral smears when they appear at local high school job fairs — trips they enjoy. Motivational CDs, along with a variety of music, are played during the day. Dancing animated characters relieve stress on a rough day. Themed birthday potlucks once a month are always welcome. During National Medical Laboratory Professionals Week, Lakeland’s lab pros have celebrated with “Guess What’s in This Picture,” “Guess How Many Needles are in the Jar,” and “Do You Know Who We Are?” “One of the best things about our lab,” says Heidenreich, “is that we try to incorporate fun into our workplace.”

“...the nominees for this year’s Medical Laboratory of the Year deserve recognition. It is heartwarming to see and read about the abundance of passion and dedication within the industry to provide high-quality services. Congratulations to all the nominees and especially the Medical Laboratory of the Year winner.” — C. Anne Pontius, MBA, CLS(AMT), MT(ASCP), President, Laboratory Compliance Consultants, Raleigh, NC, and MLO editorial advisory board

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