

Philippine Association of Medical Technologists-USA, Inc. Northern California Chapter

President's Message by Jillian Mendoza

My fellow clinical laboratory scientists, Summer is here! It is time to take deep breaths of fresh air out in the countryside's green meadows or across the seas. We're ready to wind down from busy days of working hard to earn that precious dollar and reconnect with our families, especially our children, young and old. It is the spirit of love and the mystical affection of family togetherness that help us to enjoy the summer season even more.

I feel so enthused observing what is happening within our professional circle. A good number of colleagues at work and other laboratories are busy planning the next phase in their lives, Retirement. The relaxed pace of sipping coffee in the early morning instead of rushing to work will be a welcomed change. While their thoughts are dreaming of their next great adventure, young new graduates, who have just passed their boards, are energized and ready to fulfill their dreams of becoming a clinical laboratory scientist. It is also time for those who didn't have the chance to pursue those dreams due to family responsibility or inability to resume that pathway of success to finally attain their license to practice their profession. I am inspired watching those who have come forward with a positive attitude and utilize the guidance of their experienced colleagues to fulfill their plans for success. God's blessings With guidance from and above, I'm greatly thankful that our organization's purpose is successful in assisting our unlicensed colleagues, helping and encouraging members to pursue their chosen career, inspiring their spirit, and having hope when roadblocks come across their path. They have found the right people who can push and boost their spirit not to give up. Pamet Northern California Officers are sincere in offering their assistance. We are sincerely grateful whenever we see a mem-



ber pass the board exam.

This year started with an early continuing education seminar and a fun trip to the casinos with friends and family in the month of March. We also had an early start on the review class due to a long journey to the Mediterranean seas in September. Our community service in Relay for Life will be held on August 24th in Benicia/ Vallejo area. It will be held along with our annual membership picnic. Please come and celebrate summer with us.

Please look for PAMET Northern California Chapter signs and stay with us to celebrate life. We look forward to seeing you there. Have a fun summer!

Jillian Mendoza

July 2013

Volume 26 Issue 1

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To All Pamet Members: August 24, 2013 Membership Picnic at the Relay for Life in BENICIA! Look for PAMET NORCAL Chapter Let's Celebrate Life!

Continuing Education

by Jun Nepacena, CLS, CE Coordinator

PAMET Northern California Chapter continues to provide Continuing Education seminars to all our members. One of our goals is to provide our members with their CE requirements and we pride our organization by meeting your expectations.

Our first seminar for the year 2013 was held at Monogram Bioscience on March 3, 2013. Gwendolyn Williams lectured in Blood Bank. She is a specialist in blood bank and transfusion medicine with more than 40 years of experience with significant accomplishments in consulting, teaching, training and supervising staff of the hospital blood banks and transfusion services in the United States and Africa. Jeanette Whitcomb presented topics in Clinical Application for Management of HIV/AIDS/HEP C Virus. Jeannette has contributed to the development, scale-up and routine operation of molecular and cell-based assays to evaluate drug susceptibility of HIV and HCV and also has broad responsibility for routine operations and technical leadership in the Monogram Clinical Reference Laboratory. Our second CE seminar was held on May 18, 2013 at Washington Hospital's Anderson building. Our first

speaker was Dr. Leo Kadehjian who is an independent biomedical consultant in Palo Alto, primarily lecturing and writing on the clinical, scientific, regulatory, and legal issues in drugs of abuse testing.

Our next lecturers, Major Dan and Rowena Vince Cruz, husband and wife, partnered in lecturing Blood Bank topics. Major Dan T. Vince Cruz is assigned to the 30th Medical Support Squadron, as Chief of the Clinical Laboratory Element, Vandenberg Air Force Base CA. His duties include the operational and functional command and control of the Vandenberg Air Force Base Clinic Laboratory. It was rather a very interesting topic on how a unit of blood is processed, transported and transfused in the military environment. Rowena Vince Cruz serves as a Technical specialist for NorthBay Medical Center and Vacaville

Works are on the way to facilitate another CE seminar in September in Coagulation and Microbiology. Also in September, the most exciting and long awaited CE seminar event will take place aboard the gigantic Norwegian Cruise from September 20 to October 2, 2013. This adventure will start from Venice then sail to Greece (Athens and Mykonos), Turkey (Ephesus and Istanbul), Italy (Naples, Rome, Florence), France (Toulon) and finally arrives in Barcelona Spain.

We will end the year (2013) with another CE seminar in fall (November) with possible topics in Point of Care Testing and another lecture in Microbiology.

At your service..... Sincerely, Jun Nepacena CE Seminar Chairperson





Review Class Update by Belle Ocampo, CLS

PAMET started its **35th** Review Class early this year, which was on June 8 due to the upcoming Mediterranean Cruise trip this coming September. Being the chairperson of this committee, this is another year of challenge for PAMET volunteers including me to change one's personal life to become a Clinical Laboratory Scientist (CLS). Last year, our students spent more time on weekly group studies to carry on their review class preparation for each subject. Some of the officers willingly

shared their time with the students to guide and give them more ideas about the examination, in spite of their busy schedules. This is where PAMET comes in and exists to be successful in assisting their members. Therefore, we still encourage and facilitate the new students to form study groups as a learning process to achieve their goals to the fullest. Special thanks to our lecturers for all their time, effort, knowledge and expertise in each field.

Congratulations to the our new CLS

who participated in our Review Class last year with a passing rate of 73%: Fidelis Cabatic, Mauricio



Flores, Marilou Pablo, Junelyn Ramirez, Sarah Rivas, Ellen Zaragoza and Ma Emily **Solleza. The same goes to** Loan Do for passing the MLT exam shortly after. We are proud of what you all have accomplished. To those who did not make it, please don't stop and never give up, a better day will come very soon.

Belle Ocampo

OVARIAN CANCER Current Serum Markers and Their Clinical Applications BY ALICIA ALGECIRAS-SCHIMNICH, PhD, DABCC Clinical Laboratory News, March 2013 Excerpts by: Leticia M. Acosta, M.S.



The American Cancer Society estimates that 22,280 new cases and 15,500 deaths from ovarian cancer occurred in the U.S. in 2012. The disease is the leading cause of death from gynecological cancers, as well as the fifth-leading cause of cancer deaths in women. Unlike breast cancer in which great strides have been made in detecting early-stage disease and saving lives, many women die of ovarian cancer because the early stages have no obvious symptoms and no screening tests have proven to be effective.

Today, only a limited number of tumor markers for ovarian cancer have been cleared by the U.S. Food and Drug Administration (FDA). Tumor marker applications range from screening and monitoring therapy response or recurrence to selecting treatment and predicting prognosis.

Origin and Classification

Approximately 88% of ovarian cancer cases present in women 45 years of age and older, with a median age of diagnosis of 63 years. Most cases are diagnosed in later stages of the disease, which explains the poor survival rate. If diagnosed at stage 1, the 5-year survival rate is about 93%; however, only 15% of all cases are detected at this stage, Most women, 63%, are diagnosed at stage 3 or higher. The 5-year survival rate is only 27%.

Ovarian cancer is often thought of as a single disease; however, it is composed of several related, but distinct, tumor categories. Oncologists define three main types of tumors based on the type of cells that the tumor originates from: *epithelium, germ cell, or stroma.* The vast majority, 90%, of ovarian malignancies originate from epithelial cells. Epithelial ovarian tumors are further subdivided into five histological subtypes: *serous, mucinous, endometrioid, clear cell, and transitional,* and of these, epithelial serous carcinomas represent the majority of all primary ovarian carcinomas. Ovarian germ cell tumors develop from the cells that produce the ova or eggs, whereas ovarian stromal tumors are a rare class of malignancies that develop from connective tissue cells which hold the ovary together and produce the female hormones estrogen and progesterone. These tumors combined account for as few as 5-10% of all ovarian cancers. This complexity makes it challenging to identify and characterize effective biomarkers for ovarian cancer.

CA125: A WIDELY USED MARKER

CA 125, also known as mucin 16 (MUC16), is a cell-surface, glycoprotein antigen normally expressed in tissues derived from coelomic epithelia, such as ovary, fallopian tube, peritoneum, pleura, pericardium, colon, kidney, and stomach. It is FDA cleared as an aid in detecting residual or recurrent epithelial ovarian carcinoma in patients who have undergone first-line therapy. It is also indicated as an aid in monitoring response to therapy.

About 809% of women with advanced ovarian cancer have elevated levels of CA125. However, the biomarker's sensitivity is poor in early stages of the disease, with an average of just 50% for stage 1. The sensitivity increases to about 90% for stage 11 or greater. CA125 also lacks specificity, as patients with nongynecological cancers, including breast, colon, endometrial, and pancreatic, also have elevated levels of this analyte. Levels are higher in benign conditions, such as endometriosis, uterine fibroids, heart failure, liver and renal disease.

Due to its lack of sensitivity and specificity in a single determination, CA125 is not recommended for screening asymptomatic women. Furthermore, screening resulted in unnecessary surgeries due to false-positive test results. These findings support the position of various professional entities that ovarian cancer screening has little effect on reducing mortality rates while at the same time increasing the risk of harm at the same time increasing the risk of harm in patients with low risk of ovarian cancer. In contrast to its poor utility as a screening biomarker, studies show that CA125 is useful as an aid in assessing the risk of a malignant versus benign tumor in women who present with an adnexal mass. Identifying women at higher risk of malignancy not only enables clinicians to triage patients who will benefit from more specialized care, but it also decreases morbidity and mortality and increases overall survival in the patients referred for surgical intervention.

HE4: THE NEWEST SERUM MARKER

Human epididymis protein 4 (HE4) was first identified in the epithelium of the distal epididymis and originally thought as protease inhibitor involved in sperm maturation. It is overexpressed in 93% of serous, 100% of endometrioid, and 50% of clear cell tumors, but not in mucinous ovarian carcinomas. It has higher sensitivity than CA125, 72.9% vs. 43.3%, respectively, at a specificity of 95%. Researchers also found HE4 to be elevated in more than half of the ovarian cancer patients who did not have elevated CA125 levels. Today clinicians use CA125 and HE4 in combination as an aid in assessing the likelihood of finding malignancy during surgery in women presenting with a pelvic mass. The Risk of Ovarian Malignancy Algorithm(ROMA) takes into consideration the concentration of two analytes and the patient's menopausal status to generate a score on a scale of 0-10, which translates to a high or low likelihood of finding a malignancy based on cutoffs. Women with ROMA scores above the cutoff have an increased risk of ovarian cancer, and should be referred to a gynecological oncologist prior to surgery.

OVA 1: A MULTI-ANALYTE ASSAY FOR RISK STRATIFICATION

The OVA 1 test from Vermillion, Inc.

See page 5

Vitamin D By Andrea M. Rose, PhD, MBA

Medical Laboratory Observer, May 2013 Vol. 45 No. 5

Excerpts by Connie Cailer

Vitamin D has become one of the most widely discussed and intensely scrutinized supplements in recent history. The renewed interest is due to the startling prevalence of vitamin D deficiency worldwide and linking this to multiple clinical conditions other than bone health. Vitamin D is a naturally occurring, biologically inert hormone precursor that exists in two primary forms: vitamin D₂(ergocalciferol) and vitamin D₃ (cholecalciferol). Both forms are converted in the liver to the body's main storage form of vitamin D, known as calcidiol. and then in the kidneys to the physiologically active form, or calcitriol. In this final form, vitamin D acts as a hormone. Its main biologic function is to maintain serum calcium and phosphorous concentrations within the normal range by enhancing the efficiency of the small intestine in absorbing these minerals from the diet. The interaction of calcitriol with vitamin D receptors increases the efficiency of intestinal calcium absorption from only 10% or 15% to 30% or 40% and phosphorous absorption from 60% to approximately 80%.

When dietary intake is inadequate to satisfy the body's calcium requirement, vitamin D facilitates increased calcium reabsorption in the kidney and works with parathyroid hormone (PTH) to mobilize calcium stores from the bone, effectively increasing serum levels of calcium. Because of its role in maintaining calcium homeostasis, vitamin D is essential to overall bone health, promoting healthy growth and remodeling. An insufficiency leads to thin, brittle or misshapen bones and can contribute to rickets in children and in adults, weak bones and osteomalacia. Along with calcium, vitamin D also helps prevent osteoporosis in her physiological roles of vitamin D include maintaining muscle strength, modulating immune function, regulating cellular differentiation, and reducing inflammation. A growing body of research also suggests that vitamin D might play a role in the prevention and treatment of number of diseases, including type 1 and type 2 diabetes, hypertension, glucose intolerance, multiple sclerosis, and other medical conditions, including cancer.

The major source of vitamin D for humans is the sun. VitaminD₃ can be synthesized in the skin upon exposure to ultraviolet-B (UVB) radiation from sunlight, sun exposure accounts for about 80% to 90% of vitamin D for most people. According to Mayo clinic, a single exposure to summer sun in a bathing suit for 20 minutes produces the equivalent of 15000 to 20000 IU of vitamin D₃. It can also be obtained from the diet, in the form of either D_2 or D_3 . Very few foods naturally contain vitamin D, fatty fish (such as salmon, tuna and mackerel, cheese and egg yolks). These foods primarily contain vitamin D_3 . Some mushrooms provide vitamin D_2 in variable amounts. Most Americans receive the bulk of dietary vitamin D from supplements or fortified food, such as milk, cereals, orange juice, and yogurt. In these sources vitamin D is available in D_2 and D_3 form, over the counter supplements are typically fortified with vitamin D_3 rather than D_2 . However, preparations of vitamin D for prescription are still in the form of vitamin D_2 .

Because vitamin D obtained from sun exposure, food and supplements is biologically inert, it must undergo two processes in the body for activation. The first occurs in the liver, where it is converted to 25-vitamin D status, it allows the detection and monitoring of vitamin D deficiency. It reflects vitamin D produced by the skin (from sunlight) and obtained from food and supplement for activation. The first occurs in the liver, where it is converted to 25-hydroxyvitamin D [25 (OH) D], also known as calcidiol. This prehormone is the body's main storage form of vitamin D, and the amount of calcidiol available to the body is what determines vitamin D status. Guidelines for recommended vitamin D levels are referring to calcidiol levels. Mostly bound to vitamin D binding protein, the 25(OH) D is secreted to blood plasma where because of its relatively long half-life of two to three weeks, it serves as reservoir for further hydroxylation. A second hydroxvlation occurs in the kidney, where 25(OH) D is converted to physiologically active form 1,25 dihydroxyvitamin D[1,25(OH 2D], known as calcitriol, a potent steroid hormone. The kidney secretes calcitriol into circulation, again bound to vitamin D binding proteins, where it travels to tissues involved in regulation of calcium and phosphorus supply, namely intestine, bone, parathyroid glands, and the kidney itself. Once in circulation, the half-life of calcitriol is very short compared to that of calcidiol- only about four to six hours.

In the past, vitamin D deficiency was identified by a physical rather than a biochemical manifestation, the presence of bone disease, rickets or the adult equivalent, osteomalacia. Clinical symptoms of vitamin D deficiency can include chronic, nonspecific musculoskeletal pain, weakness, and fatigue that is non-specific as to age, mobility, sex, or ethnic group. Today, serum concentrations of 25(OH) D (calcidiol) is the best indicator of vitamin D status, it allows the



detection and monitoring of vitamin D deficiency. It reflects vitamin D produced by the skin (from sunlight) and obtained from food and supplements.

Calcidiol functions as biomarker of exposure, but it is not clear to what extent 25(OH) D levels serve as biomarker of effect (i.e., relating to health status or outcomes).

The Endocrine Society and the National Kidney Foundation have established guidelines as shown below::

Organization	Endocrine Society:	NK Foundation
Sufficient:	30-100 ng /ml	>30 ng /ml
Insufficient:	21-29 ng/ml;	16-30 ng/ml
Deficiency:	<20ng/ml	<15ng/ml

The preferred level for vitamin D now recommended by many experts is \geq 30ng/ml.

The Endocrine Society recommends vitamin D screening for individuals at risk for deficiency but not for general population screening for those who are not at risk.

Diseases and conditions:

-Rickets, Antiseizure medications African-American& Hispanic children

-Osteomalacia, Glucocorticoids and adults

--Osteoporosis, AIDS medications Pregnant and lactating women

--Chronic kidney disease, Antifungals Older adults with history of non-traumatic Hepatic failure, Cholestyramine fractures

---Malabsorption Syndromes: Obese children and adults(BMI30kg/m²⁾)

--Granuloma-forming disorders: Some lymphomas

The number of individuals at risk is significant and growing. About one-third of Americans have vitamin D levels that are less than adequate for bone and overall health in healthy individuals. Since 1994, the number of Americans with 25(OH)D levels under 30ng/ml (the NKF threshold for insufficiency/deficiency) has doubled. The downward trend in vitamin D levels is associated with a decline in consumption of milk that is fortified with vitamin D, decrease sun exposure and increase use of sunscreen, and an increase in body mass index (BMI) worldwide. See page 5

Belly Fat Management — AARP BULLETIN: Dated JULY - AUG. 2012, VOL.53, NO.6)

Excerpts by Eloisa Dominguez

disease

olites.

boost levels of insulin and estrogen triggering

the growth of abnormal cells. Visceral fat also

secretes hormone and lipids. It impairs the use

of insulin increasing the risks of Type 2 diabe-

tes and causes inflammation that causes heart

Many women started gaining belly fat after

menopause. More fat goes to the midsection

Combination of diet and exercise will help to

do away the belly fat. Burning 3700 calories

will lose one pound of fat. Aim to lose two

pounds in a week. losing more than this will

lead to 'crash' diet in which you rapidly gain

back the lost weight. Doing sit-ups and

and less goes to arms, legs and hips.

Our waistline is a good indicator of visceral fat. According to scientist there are two different kinds of fat. Subcutaneous fat, the kind that you can pinch and visceral fat or belly fat which is deep inside the body that surrounds the abdominal organs.

Subcutaneous fat is not dangerous. This is found in the hips, thighs, arms and legs. Visceral fat is dangerous to health. This is stored in the bellies and causes risks of heart disease, stroke, diabetes and certain cancers. In the U. S., more than 50% of men and 70% of women between the ages of 50 and 70 have larger waists.

Visceral fat is linked with rectal, pancreatic, endometrial and postmenopausal breast cancer. Scientists think that excess fat may

Vitamin D... from page 4

(A rise in BMI causes more vitamin D to be sequestered in subcutaneous fat and not released into the circulation.)

As research links vitamin D deficiency to disease states other than bone disorders, the volume of vitamin D testing continues to increase throughout the world. New methodologies have been developed to help labs meet the increased demand for testing, including both immunoassay and protein binding assays, some of which run on automated platforms. There are several factors that a lab should assess in order to evaluate ROI and determine which platform and assay best meet its needs: (1) the cost of the equipment, especially if the testing method requires a dedicated system; (2) the complexity of the testing method in terms of staff time and proficiency requirements; and (3) the efficiency of the testing method and the relative balance of throughput with demand. For assessment of vitamin D status in patients at risk for deficiency, Endocrine Society guidelines recomcrunches can actually make your belly grow in size and shape. It will push out the fat making mend serum circulating [25(OH) D] level measured by a reliable assay. Otherwise known as total vitamin D assay, it should be

able to recognize both vitaminD₂ and D₃metab-

While LC MS and immunoassay are the two most common methods used for vitamin D testing today, considerable variability exists among the assays available and among the laboratories that conduct the analyses, due to lack of standardization. In order to address this issue, the NIH office of Dietary Supplements has established the Vitamin D Standardization Program (VDPS) in collaboration with the Centers for Disease Control and Prevention, the National Institute for Standards and Technology (NIST) and Ghent University. The aim of the program is to standardize the laboratory measurement of vitamin D status in national health surveys worldwide by linking them to the NIST reference measurement procedure (RMP). The American Association for Clinical Chemistry (AACC) and the College of American Pathologist (CAP) are among the collaborative partners in the project. The first

the belly appear larger and thicker.

Diet means more vegetables, fruits and grains. Avoid sweetened beverages, saturated fats and refined grains.



Finally, less calories and exer-

cise will melt away fat. Waistline again as mentioned is the measurement of danger zone for belly fat that is waistline for women 35 inches and larger and for men 40 inches and larger. The brighter side of all is that the belly fat is the easiest fat to lose.

Eloisa Dominguez, CLS

step in developing a vitamin D standardization protocol is to develop a reference system in order to establish a metrological chain of traceability from an assay to the reference method procedure. This has already been done with the NIST and Ghent labs using LC-MS/MS.

In addition, the CDC has developed a certification program that will monitor and certify the accuracy and precision of vitamin D test methods on a yearly basis. Once the test method is standardized to the RMP, participants can submit results from four quarterly challenges, which involve 10 blinded, single donor serum samples per challenge. These four challenges are used to determine whether the method can meet an imprecision goal of a CV of <=10% and bias of < =5%. These criteria are based on data on biological variability for vitamin D. So the laboratory may want to confirm that the test manufacturer is participating in this CDC certification program to verify end user performance for its vitamin D assay.

Connie Cailer, CLS

Ovarian Cancer from page 3

measures the serum levels of five analytes---CA125, transthyretin (prealbumin), apoliprotein A1, beta2 microglobulin, and transferrinusing two different immunoassay platforms, The Roche Elecsys for CA125 and the Siemens BN11 for the four other analytes. A high probability of malignancy is defined as a score of \geq 5.0 in premenopausal women and \geq 4.4 in postmenopausal women. Clinicians should never use the OVA1 test as a screening test for women without an adnexal mass. The test has several limitations that laboratory professionals should make clinicians aware.

Laboratory professionals should strongly discourage clinicians from using current biomarkers as screening tools because they lack specificity and sensitivity and their misuse might lead to unnecessary treatments for women and increased burden to the healthcare system. Researchers continue to investigate new biomarkers for screening, diagnosing, and monitoring the disease.. Before these biomarkers can be introduced to clinical practice, properly designed clinical trials are needed to determine if they will become useful clinical tools. That day cannot come soon enough for the thousands of women who die each year from this silent disease and their families.

Letty Acosta

Casino Trip a Big Hit by Alan Roux

March Casino trip was well supported once again. We turned down last minute guests because there were no empty seats available. We did not have a place for all the food, drinks, and snacks. Nonetheless, we had full of laughter, camaraderie and bonding with eager friends and relatives who would not miss this opportunity to win and of course help PAMET as this is one of our fundraising activities.

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This was also garnished by our own food preparermember Rolly, the better half of Nona Balingit, one Officers helped distribute of our Board of Directors. Breakfast was well served.

Our president Jill Mendoza Belle was so anxious even at the last minute recruitment and those tired and kept reminding all officers to move and participate. Danny Dominguez as our top helped notch recruiter did again! Thanks for all the agine hard work.

"Bingo Games" was always a primer to perk up everybody. Leo Non and Danny had so much things prepared prior to the bingo games. Their green jokes and whatnots were very entertaining once more. They could be aspiring comedians once they reach retirement.

our sumptuous food and sparkling drinks to our guests.

Ocampo's empanadas allured hungry by the end of the trip. This everyone it to sleep and imwinning



again next time if thev were able to trick the casinos. By all means, we have to keep on trying to beat the odds. Just be wise and know your limits.

Many thanks for all who helped to make this fundraising a remarkable hit.

Casino Trip coordinator,

Alan Roux, CLS

Our Future Events

Membership Summer Picnic & Relay for Life on August 24, 2013

> **Continuing Education Seminars** on September 7, 2013

> **CE on Mediterranean Cruise** September 20 to October 4, 2013

Christmas Party at Crowne Plaza, SFO On December 7, 2013

> For more info: @www.pametnorcal.org

PAMET NORTHERN CAL IFORNIA

celebrates life

on

RELAY FOR LIFE

and holds its

ANNUAL PICNIC

on

August 24, 2013

at

1101 Military West, Benicia, CA 94510

For more info, contact Helen @707 315 8476

PAMET Northern CaliforniaActivities



Photos taken from the casino trip on March 16, 2013



Our speakers during our May 18, 2013 Continuing Education



June 2013 Pamet Review Class



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Aug. 8, 1969 – May 4, 2013

Rosita Ruaro, CLS May 24, 1947– July 2, 2013

PAMET NORTHERN CALIFORNIA 2562 Copa del Oro Dr. Union City, CA 94587