At first glance, medical oncology and cardiology would appear two quite disparate specialties. However, over the last 10 years, important clinical connections between these two areas have been increasingly recognized and appreciated. Indeed, it is now generally accepted that, for optimal care of patients with cancer and heart disease, a multidisciplinary approach involving the oncology, cardiology and primary care services is highly desired. The term Cardio-Oncology has been coined to encapsulate this approach. In this article, particular attention is directed to chemotherapeutic agents that may cause cardiotoxicity, as well as to ways of detecting and managing this problem.

**CHEMOTHERAPY-ASSOCIATED CARDIOTOXICITY**

Such toxicity is classified into two general types. Type 1 chemotherapy-associated left ventricular (LV) systolic dysfunction is caused by agents such as doxorubicin, epirubicin, cyclophosphamide and docetaxel. Myocardial dysfunction is usually secondary to oxidative stress and results in cardiomyocyte death with ultrastructural alterations identifiable at myocardial biopsy. It is dose related and generally not reversible. Type II chemotherapy-mediated cardiotoxicity results from agents such as trastuzumab and bevacizumab. It is caused by cardiomyocyte impairment rather than cell death. It is generally not dose related and the resultant toxicity may be reversible.

**ANTHRACYCLINES**

The prototype drug in this class is doxorubicin; other anthracyclines include epirubicin and daunorubicin. Although myocardial damage causing left ventricular dysfunction and subsequent heart failure can be seen at low cumulative doses of these agents, the risk increases as the cumulative dose increases. In patients treated with doxorubicin, the estimated incidence of heart failure is 3 to 5% at a cumulative dose of 400 mg/M2, 7 to 26% at 550 mg/M2 and 18 to 48% at 700 mg/M2. The other anthracyclines have less cardiac toxicity, but each has its own cumulative cardiac dose limit.

Anthracycline induced cardiotoxicity can be classified as acute or nonacute, with the nonacute form being further subdivided into subacute or early (onset less than one year after exposure) and late (more than one year after completion of treatment). Acute cardiotoxicity occurs in <1% of patients immediately after infusions and may include myocarditis-pericarditis, transient dysrhythmias and an acute transient decline in myocardial contractility, which is usually reversible. A number of clinical and treatment factors have been identified as predicting an increased likelihood of developing anthracycline-associated cardiomyopathy. (Table 1)

Several technical methods have been investigated to reduce the incidence of anthracycline-induced cardiomyopathy. These include pharmacokinetic modification by liposomal encapsulation, alteration of chemical structure leading to drugs such as epirubicin, altering drug-infusion regimens to decrease peak plasma levels, and attenuation of iron-chelation through pretreatment with dexrazoxane. Most of these methods have been associated with a reduction in cardiovascular events in anthracycline-treated patients. However, except for the use of epirubicin, most of these strategies are not in common practice in the clinical setting. Encouragingly, recent data have suggested that, when introduced early in the treatment process, angiotensin converting enzyme inhibitors (such as enalapril) and beta blockers (such as carvedilol) may result in partial or complete recovery of cardiac function.

Although endomyocardial biopsy remains the most sensitive and specific method to assess cardiotoxicity by describing the microscopic structural alterations of myocardial tissue, its use is strongly limited by the invasiveness of the procedure. In routine clinical practice, the key measurement used in the detection and monitoring of chemotherapy-associated cardiotoxicity is the left ventricular ejection fraction.
FROM THE EDITOR
DENISE WEISS
PHD, FNP, BC, AOCNP

ONCOLOGY NURSES TO THE RESCUE

Being a caregiver to a loved one with cancer is a task that seems to go unnoticed while the health team focuses efforts on the patient. Part of the many demands placed on the caregiver is learning new information. In a relatively short time these lessons need to be implemented to the care recipient. The caregiver is expected to take on the load of learning new and multiple tasks, such as; dressing changes, medication administration with proper dose and schedule, orchestrating treatment and clinical appointments, adjusting meals, schedules, and family routines. Yet if the caregiver is experiencing mental fatigue-the inability to avoid distraction, one can easily deduce the myriad of ill consequences.

When learning takes place, there is a resultant change in the brain structure, in particular the pre-frontal cortex. When faced with a new stimulus, such as learning a new task when taking on the role of caregiver, the brain undergoes a restructuring, also known as plasticity. The changes noted in the brain are increases in dendritic branching, increasing synapses as well as the number of synapses per neuron. Sleep is recognized as an essential component to learning, memory, and brain plasticity. Deprivation of sleep will inhibit memory and reduce neurogenesis that is a byproduct of learning (Markham, Black, Greenough, 2007). More and more research is revealing the role of sleep on memory and learning (Ambrosini, M. et. al., 1988, 1992, 1993). Sleep encompasses multiples phases. During these phases the brain undergoes alterations in neurochemistry (Walker, M., & Strickgold, R., 2004). Memory reprocessing, or consolidation, occurs during sleep and is the vital link between learning and memory formation (Strickgold, 2005). This finding further underscores the active brain process of sleep.

In a study by Fischer, Hallschindl, Elsner and Born (2002), 52 healthy young student volunteers were asked to sleep for 8 hours after practicing a finger thumb opposition task, a test of motor skill. Findings concluded that sleep after practice enhanced speed of sequence performance by 33.5%, and reduced error rate by 30.1%. Thus reinforcing the critical role of sleep in storing and enhancing motor skills.

Brain imaging studies such as the functional magnetic resonance imaging (fMRI) demonstrates increased plasticity in the pre-frontal cortex during learning. The pre-frontal cortex is important to the caregiver in the sense that it is the epicenter of executive function. Executive function comprises working memory, thinking, planning, and decision making. The pre-frontal cortex controls other brain regions, thus its plasticity can lead to changes in cognitive behaviors (Kuboshima-Amemori, & Sawaguchi, 2007).

Therefore, sleep and pre-frontal cortex plasticity is of importance to the caregiver. Unfortunately, many caregivers report problems with sleep. McCurry and Teri (1995) studied 136 family caregivers and found 68% reported sleep disturbance in the form of sleep initiation and maintenance, or experiencing daytime fatigue. Bramwell, MacKenzie, Laschinger, and Cameron (1995) studied 37 caregivers of persons with terminal cancer. The analysis revealed 59% received more than four hours of sleep per night but viewed this amount to be insufficient. Carter and Chang (2000) examined sleep and depression in the cancer caregiver and identified that caregiver sleep problems strongly positively correlated with caregiver depression. The authors also found that caregivers were averse to taking medications to induce sleep for fear of not being able to appropriately respond to the demands in the caregiver role.

Oncology nurses are in a unique position to encourage rest for the family caregivers. We can query the caregivers on their sleep quality prior to and after providing care instructions. Helping families understand the important role of sleep may provide the permission needed to take care and time for oneself in order to better assist others.

References
**Highlighting a Member**

**Pam Laszewski, RN, OCN®**

Meet the MDONS President-Elect, Pamela Laszewski. Pam lives in Ontario, Canada and works in Radiation Oncology at Barbara Ann Karmanos Cancer Institute, in Detroit, Michigan.

Pam says the best thing about nursing is being able to help people, whether helping is via a nursing intervention or simply lending an ear. She loves to give and get hugs, knowing that there is nothing like the human touch to show someone you care.

Since she was a little girl, her father knew she would be a nurse, so she never considered being anything but that caring individual who came to oncology via orthopedics. Pam began her nursing career at Hutzel as a staff nurse in orthopedics and when she hit a restless point in her career, she came upon radiation oncology. Through the support of good friends and the guidance of a great mentor a whole new world of oncology medicine and radiation therapy opened up to her and she says she “has never looked back”.

Since 1997 Pam has sat on multiple work committees to advocate for professional development and quality of care. Metro Detroit ONS is very important to Pam because, “Belonging to a professional organization where you have colleagues to share experiences and education with is special. Having other nurses that you can collaborate with to discuss how their processes and procedures may be delivered is stuff that you cannot get out of books. Sometimes it is just nice to attend MDONS meetings to relieve some stress and see some familiar faces and of course, share a hug! Having that personal growth right here in our own backyard is very important.”

Pam is an active peer educator and nurse researcher. You may recall her poster presentations from the 37th and 38th ONS Congresses and the 2014 Karmanos Ambulatory Fall Conference. She presented the collaborative research that she conducted on skin care practices, promoting patient adherence to ONS PEP guidelines for radiation dermatitis and also the care of the radiation therapy patient with pacemaker/defibrillator. Watch for the publication she collaborated on to be released soon by the Clinical Journal of Oncology Nursing.

Happily married for 25 years, Pam has two teen sons, and four great nephews who bring her more joy than she can express in words. If she is not at work, Chamberlain College of Nursing (where she is advancing her nursing education), MDONS meetings, or home, you can find Pam helping her mom with Lion’s Club functions. I am glad that she made time for MDONS leadership. Thank you Pam, for all you do for us. 

*Susan Wozniak, RN, MSHS, OCN®*

---

**November**

**Falls in Hospitalized Cancer Patients**

Presented by Rebecca Allan-Gibbs, PhD, RN, CNS-BC, AOCNS

Summarized by Mary Wilson, BSN, RN, OCN

Patient falls, and preventing them, have been a priority in healthcare for decades. This healthcare problem has come under renewed focus in the last few years. This is due to the realization of the costs involved with patient falls that has reached billions of dollars. However, the studies done on the causes of falls have used inconsistent methods and have not focused in depth on cancer patients.

The inpatient fall rate is 3-20% with about 30% of falls resulting in injury. There are many factors that contribute to patient falls. Some of these factors include an unfamiliar environment, new equipment and patient lack of familiarity with the equipment, medication changes or new medications added causing new side effects, and slippery or uneven floor surfaces. Additionally the patient may be experiencing a change in their elimination pattern due to increased oral or IV fluids, diuretics, laxatives or preps for tests. The patient’s mental status may also be altered due to illness or medications or the patient may be reluctant to ask for assistance. They may also resist ambulating at all so that when they do, they have a fear of falling and this places them at increased risk.

The presenter’s study showed that twenty percent of falls in hospitalized cancer patients lead to minor injuries. The highest rate of injury occurs with the first fall. Interviews with patients that experienced a fall show that two thirds had neuropathy, one fourth were hard of hearing, and a third had altered elimination. Almost two thirds had a previous fall.

*The presenter’s study showed that twenty percent of falls in hospitalized cancer patients lead to minor injuries.*

Continued on following page
The most frequent classifications of medications prescribed for these patients were narcotics, anti-emetics, and anti-hypertensives. The patients had an average of 4 comorbidities each and an average Karnofsky score of 73.

The study excluded hospice patients as well as those with sitters or in restraints. Among the patient population in this study there were 30 falls, 26 of which were not witnessed and 60% took place in the patient's room. The average age was 65.5 years and almost half of the falls took place during the afternoon shift. Six of the falls resulted in minor injuries such as lacerations and swelling.

The implications of this study and a review of previous studies warn us to be aware of patients with these risk factors and affirm that preventing falls is challenging. More research is needed in many aspects of fall risk and prevention including the documentation of the risk factors, the thorough documentation of any falls that happen, and why patients fall when staff are present.

Meeting Summaries

November  Continued from previous page

Strong relationships were noted between increased falls and those patients who had altered elimination, had previous falls, and used assistive devices. Those with a longer length of stay had a greater chance of falling.

The greatest predictors noted in this study were patients with a lung cancer diagnosis and those on diuretics or anti-epileptics.

December

Here are photos from our December meeting. As is our practice, bags were made to be distributed at Health Care for the Homeless. See how much fun you missed!
January
CARING FOR METASTATIC CASTRATE RESISTANT PROSTATE CANCER PATIENTS ON XTANDI (ENZALUTAMINE): AN OVERVIEW FOR THE HEALTHCARE TEAM.
PRESENTED KAREN BARANOWSKI, MSN
SUMMARIZED BY CAROLE BAUER MSN, RN, ANP–BC, OCN, CWOCN

One in seven men will develop prostate cancer in their lifetime. It is the second leading cause of cancer death. In 2014, 230,000 men were diagnosed with prostate cancer. The expected death rate from prostate cancer in 2014 is expected to be 30,000. Greater than 84% will have metastatic disease at time of diagnosis and 46% will develop metastatic disease with at least one bone metastasis within two years of diagnosis.

For metastatic disease, the mainstay frontline therapy is androgen deprivation therapy. Orchiectomy, formerly the mainstay of therapy, has now been replaced by chemical castration. Initially it was thought that continuous androgen therapy, such as Lupron, was the only option. A clinical trial, SWOG 9346, demonstrated that intermittent therapy was not inferior to continuous therapy with a medical survival for continuous being 5.8 years and intermittent was 5.1 years.

Early docetaxel chemotherapy in symptomatic patients is likely to change the therapeutic sequencing in metastatic disease. Docetaxel acts by disrupting the microtubular network in cells essential for mitotic and interphase cellular functions. When studied, (ECOG 3805) demonstrated an overall survival benefit of adding docetaxel based chemotherapy to androgen deprivation therapy in hormone sensitive metastatic prostate cancer.

However, the majority of patients who develop metastatic disease will also develop castrate resistant disease. Therefore for these patients a variety of options are available. Some of the options include traditional chemotherapy such as cabazitaxel. Other novel agents include Provenge, abiraterone, and enzalutamide. Many of these therapies require the use of prednisone.

Glucocorticoids appear to have a hormonal and direct anti-tumor effect in prostate cancer. Individuals with castrate resistant disease may still have hormone sensitive disease that is stimulated by weak androgens from the adrenals. These androgens are suppressed by prednisone through negative feedback on adrenocorticotropic hormone.

The newest drug to come out for the symptomatic patient who is castrate resistant is enzalutamide. Enzalutamide was first approved in 2012 after the AFFIRM trial. In the AFFIRM trial, the drug was used only after docetaxel if there was progression of disease. The second trial of the drug, PREVAIL, looked at treatment prior to docetaxel. This trial was concluded early due to such a great benefit shown in the experimental arm of the trial. The trial showed a 30% reduction in risk of death and an 81% reduction in radiographic progression. The calculated median overall survival was 32.4 months compared to 30.2 months for patients on placebo. In the trial, both side effects and safety were no different than that of the placebo. Enzalutamide is a competitive antagonist of the androgen receptor. Thus, the drug inhibits androgen from binding to the receptor; it inhibits binding to the DNA; there is a decrease in proliferation which results in a reduction of tumor cells and cellular death. The median duration of treatment is 17.5 months.

With enzalutamide, no steroids are necessary to obtain the response. There is no additional monitoring except for concomitant administration with other CYP2C9 drugs (i.e. midazolam, warfarin, omeprazole, pioglitazone, gemfibrozole, itraconazole). There are no food restrictions. It can be administered to patients with mild hepatic or renal failure. The major side effect from the drug is fatigue. It has also been linked to increased risk of seizure activity (0.9% in the AFFIRM trial; 0.1% in the PREVAIL trial).

Cost can be considered a major drawback to administration of enzalutamide. Thus, the manufacturer has set up a number of programs to assist patients to be able to afford the cost of the drug. These programs include a quick start program where the patient can get 14 days of drug without cost prior to insurance authorization and help with referral to a non-profit organization for assistance with copayments. Enzalutamide is another drug in the tool box to care for patients with metastatic castrate resistant prostate cancer.

Watch a Video Series on Specialty Pharmacy
Learn how specialty pharmacies benefit oncology nurses in a new video series.
Learn more>>
Coronary Alkylating Agents

Valvular

Continued from front cover

fraction (LVEF) (normal range for the author’s echocardiography laboratory is 55% to 70%). Formerly, the imaging method used to measure LVEF was represented by 99m Tc multigated radionuclide angiography (MUGA), a nuclear imaging technique able to visualize the cardiac blood pool by γ-camera with ECG-triggered acquisitions. However, increasing awareness of the considerable radiation exposure to the patient with this imaging modality, has, in recent years, resulted in ultrasound (i.e. echocardiography) imaging becoming the preferred imaging technique. The diagnosis of cardiotoxicity, in the patient with symptoms of CHF, is made on the basis of a decline in LVEF of at least five percentage points to an overall LVEF of <55%. In the patient without symptoms of CHF, the diagnosis is made on the basis of a fall in LVEF by >10 percentage points and an overall LVEF < 55%. However, although widely used, echocardiographic LVEF assessment has been shown to have a low predictive power for subclinical myocardial injury. New imaging techniques and biomarker evaluation are emerging as methods to overcome this problem. Foremost amongst these new imaging modalities is strain rate imaging. This is a noninvasive technique that can quantitatively analyze myocardial mechanics by detecting speckles from the myocardium with 2-dimensional echocardiography. Injury to the cardiomyocytes causes the release of substances into the blood flow that can be used as biomarkers of subclinical myocardial damage. Ultrasensitive troponin I is the most reliable marker, as detecting the level of the concentration of ultrasensitive troponin I after treatment is predictive of development of cardiotoxicity.

HER2/NEU INHIBITORS

Trastuzumab was the first of this class of drugs to be released to the market and was followed by lapatinib, pertuzumab and T-DM1. Up to one third of patients treated with trastuzumab may develop a drug-induced cardiomyopathy. Interestingly, trastuzumab-induced cardiomyopathy does not appear to be dose dependent and is often reversible with discontinuation of this agent. The incidence of cardiac dysfunction ranges from 2% to 7% when this agent is used as monotherapy, 2% to 13% when used in combination with paclitaxel, and up to 27% when used with anthracyclines plus cyclophosphamide. Pentuzumab has demonstrated no evidence of cardiotoxicity in studies to date. Lapatinib has a low likelihood (<2%) of causing left ventricular dysfunction. T-DM1 has a cardiotoxicity rate similar to lapatinib. Unique among this class of drugs, lapatinib causes an apparent dose-dependent prolongation of the QT interval and electrocardiographic (ECG) monitoring has been suggested.

ACE inhibitors have been found useful in the treatment of trastuzumab-induced heart failure. Monitoring for the development of cardiotoxicity caused by trastuzumab and for recovery of cardiac function use the same techniques as described above for anthracycline-associated cardiomyopathy.

TAXANES

The microtubule-targeting drugs, paclitaxel and docetaxel are both associated with the development of LV dysfunction, being more common with paclitaxel (5 to 15%) than with docetaxel (2 to 8%). The higher incidence of heart failure with paclitaxel is predominantly seen when it is combined with doxorubicin and is possibly due to the effects of paclitaxel on doxorubicin metabolism. The most frequently described cardiac effects of paclitaxel are bradycardia and heart block; these are not seen with docetaxel.

FLUOROPYRIMIDINE

Although acute heart failure, dysrhythmias and ECG changes have been associated with 5-FU treatment, the most commonly described and severe cardiac side-effect is myocardial ischemia, which clinically ranges from angina to acute myocardial infarction. Cardiotoxicity appears related to endothelial dysfunction and coronary vasospasm. Capecitabine may also elicit myocardial ischemia and ventricular dysrhythmias, although it appears to have less toxicity than 5-FU.

CYCLOPHOSPHAMIDE

This agent generally does not cause relevant cardiotoxicity. However, high-dose rapid administration may induce lethal acute pericarditis and hemorrhagic myocarditis.

Angiogenesis inhibitors (anti-vascular endothelial growth factor) cancer drugs

Angiogenesis inhibitors that target VEGF with either antibodies against VEGF (bevacizumab) or small molecule TKIs (sunitinib, sorafenib) are associated with a range of cardiovascular effects. The reported incidence of heart failure with bevacizumab ranges from 1.7% to 3%. The mechanism may be related to uncontrolled hypertension and inhibition of VEGF/VEGFR signaling. In clinical trials, grade 3 to 4 severe hypertension occurred in 6% of patients with rare cases of hypertensive crisis, including encephalopathy. Heart failure has been reported to develop in 4% of sunitinib treated patients and 1% of sorafenib treated patients.

CONCLUSION

From the above considerations, it is clear that Onco-Cardiology is an emerging discipline that promotes optimal care of patients who have both cancer and heart disease. Development of formal Onco-Cardiology clinics is a logical step in firmly establishing this new discipline. In such clinics, the oncology team works side by side with the cardiology team, and have access to on-site echocardiographic imaging and biochemical testing.
This year marks the 40th anniversary of ONS and the 39th of the inception of our local Detroit chapter. In reflecting on how nursing has advanced over the past 40 years I am reminded of how ONS has helped to lead the way for oncology nurses. The ONS mission “To promote excellence in oncology nursing and quality cancer care” guided by the vision of transformation of cancer care, combined with the four pillars from the ONS strategic plan of quality, knowledge, leadership and technology have been pivotal in the development of oncology nursing as we know it today. As we approach this milestone I am grateful for the passion and vision our charter members had to implement this local chapter. Many of our founding members remain active today which I think speaks to the success of MDONS. Our chapter members and leaders constantly impress me with their commitment to oncology nursing and representation of the ONS vision.

In our chapter’s continued efforts to follow the ONS roadmap for transformation of cancer care we have decided to take a new approach with our dedication to providing access to educational opportunities this year. In response to a decreased attendance at our monthly educational offerings and to provide educational opportunities that accommodate all oncology nurses schedules, we will be offering two mini conferences in the spring and fall, on a Saturday morning. These morning sessions will provide 2-3 ceu’s each. Our first morning program will be offered on March 28. We will continue to have occasional monthly evening meetings on weekdays and other educational offerings this year, as well as the annual president’s dinner in May and Holiday Party in December. Look for more details about these programs on the MDONS virtual community web page. If there is something that you have been wanting to know more about, or have heard a great speaker that you think would be excellent for our group feel free to let any of your board members know.

Recently, I had the opportunity to accompany Gayle Groshko, past president on a mission to share the vision and benefits of ONS with the inpatient and outpatient oncology nurses at our institution. Our goal was to promote the many benefits of ONS and MDONS membership and to discuss why membership is so important to each and every oncology nurse. What surprised me was although every nurse we met knew what a great organization ONS, many were not really sure about how the organization could directly benefit the individual nurse. ONS and MDOS are truly the best professional nursing organizations of which I have been a part. This is an organization that is committed to each and every one of us. Through the ONS strategic plan and by providing endless opportunities and resources for its members this is an organization to which every oncology nurse should be a part. I encourage each of you to utilize the resources available through ONS and MDONS to support you and increase your professional satisfaction. There are many awards and scholarships available through our chapter as well as through ONS. In addition MDONS awards two of our members yearly, at the annual president’s dinner with the OCN and APN of the year award. If you know of a terrific oncology nurse, don’t hesitate to submit a nomination.

I hope in reflecting on this year’s 40th anniversary of ONS you are inspired. Whether it is in looking back at the advancements that have been made in oncology nursing or in looking ahead to the future and sharing in the vision of ONS. I thank each of you for your commitment to this profession and for being a part of our chapter.

I encourage each of you to utilize the resources available through ONS and MDONS to support you and increase your professional satisfaction.

Meet Your New ONS Leaders

The votes are in. The newest leaders to represent you nationally are

- President-Elect: Susan M. Schneider, PhD, RN, AOCN®, FAAN
- Treasurer: Kay Harse, RN, MS, AOCN®
- Director-at-Large: Jeanie Rosiak, DNP, RN, ANP-BC, AOCNP®
- Director-at-Large: Joni Watson, MBA, MSN, RN, OCN®
- Nominating Committee: Frances Lee-Lin, RN, PhD, OCN®, CNS

Learn who will represent you in your specialinterest groups.>>

Dive Into Essential New Online Courses for Oncology Nurses

CLICK THE ON-DEMAND COURSE THAT SUITS YOU:

- PREVENTION, DETECTION, AND THE SCIENCE OF CANCER
- TREATMENT AND SYMPTOM MANAGEMENT
- QUALITY-OF-LIFE ISSUES
- PROFESSIONAL PRACTICE—ONCOLOGY NURSE

Learn About Acute Lymphoblastic Leukemias

Download a free copy of a new ONS:Edge white paper, Treatment Regimens for Young Adults With Acute Lymphoblastic Leukemia.

Learn more>>
THE CHAPTER CAPSULE

...is a publication of the Metropolitan Detroit Chapter of the Oncology Nursing Society. MDONS is devoted to improving the quality of care given to patients experiencing cancer. This newsletter is published four times a year, in spring, summer, fall and winter. Letters and articles from members are welcomed. All material is subject to editing for space and clarification. Neither the Metro Detroit Chapter nor the ONS National Office assumes responsibility for opinions expressed herein. Acceptance of manuscripts does not indicate or imply endorsement. Materials may be submitted to:

Carole Bauer, RN, MSN, ANP-BC, OCN, CWOCN • 6116 Smithfield Drive, Troy, MI 48085

---

2015 MDONS OFFICERS

**PRESIDENT**
Heather Lowry
Heather.Lowry@beaumont.edu

**PRESIDENT ELECT**
Pam Laszewski
laszewski@karmanos.org

**PAST PRESIDENT**
Gayle Groshko
Gayle.Groshko@beaumont.edu

**SECRETARY**
Ann Calcaterra
ACalcaterra@beaumont.edu

**TREASURER**
Joanne Gondert
joanne.gondert@beaumont.edu

**NEWSLETTER CO-EDITORS**
Carole Bauer
bauer.carole@gmail.com

Denise Weiss
weissd@karmanos.org

**STAFF**
Susan Wozniak
Susan.Wozniak55@gmail.com

Theresa Benacquisto
theresab65@comcast.net

---

Nancy Morrow
Nanmor04@yahoo.com

Melissa James
objee@gmail.com

Rita Dundon
313-881-8584

Mary Wilson
MFW1311@aol.com

Loretta Biskup
edbiskup@yahoo.com

Sabrina Richer
sabrina.richer@bms.com

Gayle Snider
gayle.snider@infusystems.com

Michelle Wallace
mwallace@beaumonthospitals.com

Angela Maynard
amaynard@beaumonthospitals.com

Susan Hansell
susan.hansell@comcast.net

Sandy Remer
sdremer@earthlink.net

Heather Lowry
Heather.lowry@beaumont.edu

Angela Swantek
A_swantek@yahoo.com

Patti DuLong
DulongP@habitant.org

Laura Jaronski
Laurajaro@sbgglobal.net

Michelle Manders
michelle.manders@beaumont.edu

Kirsten D’Angelo
Kirsten.DAngelo@beaumont.edu

---

METRODETROIT.VC.ONS.ORG