

Message from the President

I wanted to take this opportunity to talk to about some change, and how important it is for ISOPP. I was thinking about this a lot this weekend. It started with a television show. I was watching a television program set in the 1960s in the United States. I was so surprised by the differences from 1960 to 2014. I shouldn't have been surprised; I lived through the changes. I have watched the development and implementation of new technologies, and more importantly – how these technologies have changed the way people live their lives. I also had the opportunity to attend an oncology research conference. I listened to thought leaders in oncology describe recent advances in the science of oncology; again I thought about how these changes have ultimately impacted the way people with cancer live their lives. ISOPP is also going through some changes. And it is important that we navigate the changes in a way that ultimately helps the members and the Society. In order to do that, we need the help of the membership to help assure the direction of change is one that helps the organization grow and thrive, and to continue to develop mechanisms to better support members throughout the world. The ISOPP website is changing. Because of the work of the website redesign taskforce we will have a new website in the next few months. I want to extend my appreciation to Shaun O'Conner, Steve Stricker and Felice Musicco for their leadership with the taskforce to develop a website to meet the evolving needs of the membership.

Also, many thanks to Sherri Corrie from Sea to Sky for her help coordinating all these efforts.

With the change in website, there was a need to look at the ISOPP logo. The Secretariat really debated the question of changing our logo – as this logo represents ISOPP, and has for many years. Ultimately it was decided to work with the website design taskforce to look at options, canvas membership for their thoughts on a new logo, and launch the website with a new ISOPP logo. It is change, and with change often comes a feeling of loss for the old – but I am optimistic that the new logo will represent ISOPP going forward.

The most important changes for ISOPP are the changes that are affecting oncology pharmacy practice across the globe. It is essential that we have representatives from around the world to help the Society move forward into our next 20 years. We need volunteers to help lead ISOPP, and I ask you to take some time over the next few months to think of how you can lend your time and expertise to the organization.

Here are a couple of ways you can help:

Consider placing your name on the ballot for ISOPP elections. Harbans Dhillon will be seeking volunteers for Secretariat positions in the next few months – and I encourage you to consider putting your name on the ballot. It is an important way for you to put your thoughts and ideas into action. Encourage a colleague to place their name on the ballot for ISOPP elections. Help identify those oncology



pharmacists that you feel have something to contribute to ISOPP. It is a way to encourage colleagues to become more involved. And it is a great way to mentor those who may be interested in a leadership role, but are unsure about taking on this opportunity. Recruit a member for ISOPP – this could be a pharmacist you know from work, from travels, or from meetings. Volunteer for an ISOPP Committee.

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Hello from Argentina!

Dear Colleagues:

We are very pleased to contact you from Córdoba, Argentina.

We are Graciela Núñez and Silvana Quiroga. Both of us are pharmacists from public hospitals and we are also Hospital Pharmacy Specialists. In addition, we are part of the Working Committee of Hospital Pharmacists "Comisión de Trabajo de Farmacéuticos Hospitalarios", CTFH for its acronym in Spanish. The CTFH is a team formed by teachers from the Pharmacy Department (Facultad de Ciencias Químicas, Universidad Nacional de Córdoba) and Hospital Pharmacy Specialists. This group is interested in studying, discussing, communicating and educating to improve the safe and rational use of medicines. Thereby improving patient care, the medical team can take better

decisions to achieve therapeutic goals. Both of us are interested in oncology, but only Silvana works in the area.

In this first communication we want to give you a notion about oncology in our city. This practice has an important problem. We have regulations ensuring that all patients have access to a comprehensive treatment (surgery, radiotherapy and chemotherapy), and the presence of a Pharmacist in the Oncology Units is required. Even though such norms indicate that pharmacists are responsible for preparing/manipulating anticancer medication; most of them are only involved in the procurement activities. Currently, the government and health insurances must supply the drugs, while nurses work in the preparation and administration activities.

We can say that, with a few exceptions, the rest of the country

has a similar reality. This problem is making us look for different options to find pharmacists interested in working in oncology. The main idea is to create a network that allows us to share experiences and knowledge.

If you like, in the following reports we will tell you how our work days are at



CTFH class of April 2014

Message from the President continued

Look for opportunities – as we will be asking for members to help with the important work of the organization.

People respond to change in different ways. Some people embrace it – those early engagers – and love the process. I really love those people. If you are one of these change loving people, we really need your help as we transition the Society into the future.

Some people are a bit more cautious. I tend to be one of those types. While I do love to look at new ways to do something – I tend to be a bit careful. If you are one of these careful people, we

need your help as well.

Other people say they don't like change much. They value what is good now. If you are one of these types of people to know that change sometimes isn't the best way to move forward, we very much need you.

I am very excited about the future of ISOPP, and hope you will take an opportunity to actively participate in ISOPP.

Rowena (Moe) Schwartz, Pharm.D., BCOP, ISOPP President (rowenan16@gmail.com)



Members of CTFH



Lectures in progress

the hospital.

We are thankful for this opportunity and invite you to visit our website www.ctfh.com.ar

Best regards.

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Oncology Pharmacy in Chile

My experience has been varied in oncology, I was able to work on different aspects of cancer treatment. One of the main areas of oncology in which the pharmacist works in Chile is preparing chemotherapy, respecting international safety standards (Quapos, etc) and national (technical General Rule No. 25, etc). There are some hospitals that do not have the infrastructure for preparing cytotoxics, and thus there are companies dedicated to the preparation of chemotherapy (e.g. Redsana, Terapia,) that is distributed to different cancer centers.

Another area where the pharmacist is involved is dispensing cancer drugs (oral therapies such as capecitabine, hormones, etc) and drugs for the prevention and management of adverse events associated with chemotherapy, for this is most of the pharmaceutical care where the pharmacist makes an information dispensing chart for the patient indicating the drug, possible side effects and the administration schedules to be used.

An important area is pharmacovigilance as the patient undergoing chemotherapy may experience adverse drug reactions (ADRs), and if the patient does have an ADR it is reported to the Institute of Public Health (ISP) – the institution in Chile responsible for compiling a record of drug safety.

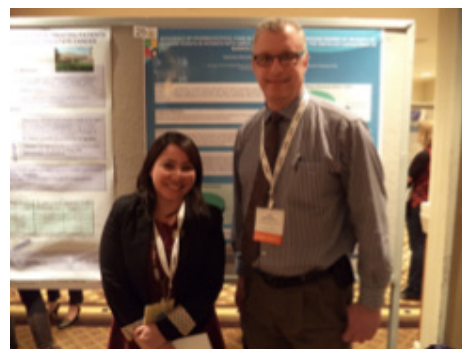
A further area that is developing in our country is the pharmacotherapy monitoring of patients undergoing chemotherapy, this is the area where I have mainly worked: clinical pharmacy. My experience has been focused on the monitoring of adverse events and the management of these. An initial interview is done before the patient begins chemotherapy treatment during which patient medical and pharmacological data is collected, and a “patient education leaflet” is made. This explains their chemotherapy treatment, and includes drug names and what are the possible toxic effects. In addition to explaining how

to handle these adverse events with drug therapy support (antiemetics, antidiarrheals, granulocyte colony stimulating factors, etc). After this first pharmacological interview the patient receives their chemotherapy and once at home again remote monitoring is used where the patient is called by telephone to assess any adverse effects and outcomes of drug therapy support. If the adverse effects cannot be controlled, dosage modifications or changes in pharmacological therapy may need to be recommended by the medical oncologist.

In Chile healthcare is classified into two: Public and Private. In the public area prevention and cancer treatment is free and is based on national consensus guidelines as PANDA (adult patients) and PINDA (pediatric patients). In the private area the patient pays for treatment and treatment does not have to follow the PANDA or PINDA guides. The Clinical hospital of the Catholic University where I work is part of the health Network UC CHRISTUS a private health network having different centers, 1 hospital, 2 clinics, 11 medical centers and various support units. The hospital has a central admixing service divided into three major areas including parenteral nutrition and oncology drugs and has an staff of 11 pharmaceutical chemicals (QF) and 16 pharmacy technicians.

UC Network CHRISTUS Health is a private network that has different types of agreements for patient care; so patients can be treated at both public and private level, accessing the same professionals and at the same standard of quality but with different copayments established.

The Cancer Center RED UC Health (CECA) has a multidisciplinary professional team of physicians, nurses, pharmacists, chemists and psychologists working to tackle the disease. The preparation of the chemotherapy is performed in the central admixing by QF, governed by Chilean standards of preparation



Sulamita with ISOPP Past President John Wiernikowski

of pharmaceutical products in the pharmacy formulary. The patients receiving chemotherapy can be divided into outpatients and hospitalized patients. In total about 1600 chemotherapy treatments are prepared by the pharmacy each month. Oncology pharmacy in Chile certainly has grown and become a major power in Latin America. Please accept the invitation of all Chilean oncology pharmacists to attend ISOPP 2016 and to visit our beautiful country.

Sulamita Miranda Nam

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The second European Conference of Oncology Pharmacy (ECOP2),

was held in Krakow, Poland 26-28 June 2014.

Over 500 participants attended from 49 countries as diverse as Australia, Japan and South Africa. 45 invited speakers gave 112 presentations in 19 sessions representing both clinical and practical sessions. Congratulations to the organizers of this successful meeting.

ECOP3 will be held in 2016 in Dubrovnik, Croatia.

Dates to be determined. To view some of the activity at ECOP2, to view lectures and the daily news, go to www.esop.li/index.php

The annual meeting of the American Society of Clinical Oncology (ASCO) took place from May 30 - June 2, 2014 in Chicago, Illinois in the USA. This meeting, of over 25,000 attendees, provides a wide variety of educational opportunities. Many presentations highlight reviews of therapeutics, new quality and economic issues, and product specific research for compounds in many stages of the drug approval process. My focus for the meeting continues to be on patient care topics and new information on the dosing, side effect management, or therapeutic use of pharmaceutical or supportive care agents with the goal to take away information that can be integrated into current practice as well as to learn new trends and upcoming products for the coming year. New insights into patient care from this year's meeting for me were:

Tyrosine kinase inhibitors (TKI) and prolonged Qtc intervals (Abstract 2590)

Patients from 4 centers in the Netherlands were screened for use of erlotinib, gefitinib, imatinib, lapatinib, pazopanib, sorafenib, sunitinib, and vemurafenib. Assessments were made for changes in Qtc interval from baseline, chance of becoming a high risk individual (Qtc > 470 msec), and clinically relevant changes in Qtc intervals, defined as an increase > 30 msec. Of 363 eligible patients 31% had > 30 msec changes and 4% who were not already > 470 msec went above that threshold to become high risk. This was most common with vemurafenib and least common with pazopanib, erlotinib and gefitinib. These agents may still have risk for Qtc prolongation as they were poorly represented in the sample. Bottom line was that patients starting on TKIs should have a baseline Qtc and regular follow up to see if they have significant changes. There was no recommendation for a suggested frequency of Qtc monitoring.

Older patients and pulmonary risk from bleomycin. (Abstract 8584)

In a retrospective review of 161 Hodgkin lymphoma (HL) patients treated primarily with ABVD (83%) it was found that patients > 45 years of age were at higher risk for developing bleomycin induced pulmonary toxicity (BIP) and subsequently dying of it, regardless of whether their cancer was cured. An average of 3 cycles were administered prior to the appearance of signs of toxicity, bleomycin related mortality was 5% in the overall cohort and 11.5% in patients who developed pulmonary symptoms, and a higher BMI was associated with earlier onset BIP toxicity. Pulmonary function testing in the asymptomatic patient was not shown to be helpful but stopping a patient's bleomycin when there were mild/minimal symptoms was key to managing BIP. Clinical signs can be subtle and non-specific. Cough, dyspnea, reduced exercise tolerance, and fever should be worked up with infection excluded as a cause. Omission of bleomycin at symptom onset has been shown to not effect outcome and BIP continues to provide impetus to investigate non-bleomycin containing regimens for HL.

Dose reductions for hand-foot syndrome (HFS) and patient outcomes in metastatic renal cell carcinoma (Abstract 4580)

A retrospective review of 123 patients treated with vascular endothelial growth factor receptor inhibitors (VEGFRI) examined the effects on survival of holding or reducing doses to manage HFS. Agents reviewed were sunitinib (77%), sorafenib (15%), pazopanib (7%), and axitinib (1%). Patients with HFS, despite dose reductions/interruptions had improved mean progression free survival (PFS) 14.1 vs 6 months and overall survival (OS) 42.8 vs 10.8 months. Given the retrospective nature and potential reporting bias HFS may be a potential predictor for clinical outcomes in

metastatic renal cell cancer (mRCC) treated with VEGFRI but requires prospective validation. Grade > 2 HFS was associated with improved OS vs < 2. Thus dose reductions for the management of HFS in mRCC treated with VEGFRI do not appear to affect OS.

Transcutaneous electrical nerve stimulation (TENS) for chemotherapy-induced peripheral neuropathy (CIPN) (Abstract 9622)

Adult patients with > 1 month of pain or CIPN symptoms with at least 4/10 tingling or pain in the prior week were treated with up to ten 30 minute sessions daily via TENS stimulator to the affected area. Symptoms were monitored daily via questionnaire with numerical pain scale. The TENS unit used was called the "Scrambler" and over a 10 week period scores in pain, tingling and numbness decreased by 30-50%. The benefits generally were noticed in the first week of therapy and were maintained for the 10 week period in most patients. In this pilot trial (n=37) the later cohorts appeared to receive more benefit than early ones so there may be some learning curve in how to use these machines.

The clinical course of oxaliplatin-induced neuropathy (Abstract 3595)

neuropathy scores were collected during cycles of FOLFOX chemotherapy using the CIPN-20 instrument in an Alliance colon cancer study which had investigated previously reported outcomes with calcium/magnesium prevention therapy (reported last year as negative). 333 patients who received 6 cycles of FOLFOX at 2 week intervals were assessed for neuropathy at 1, 3, 6, 12, and 18 months from therapy initiation. The following profile emerged: a) Cycle 1 toxicity predicted for acute symptom severity in subsequent cycles. b) Neuropathy symptoms do not completely resolve between cycles and generally are approximately half as severe in the first cycle vs what will be

seen in subsequent cycles. c) Hand symptoms are more severe during therapy while foot symptoms were more prominent chronically. d) There is also a correlation between acute symptom severity and the severity of chronic neuropathy.

Heart rate changes during crizotinib treatment. (Abstract 8106) –

Individuals with ALK positive NSCLC treated with crizotinib 250 mg twice daily (N=1053) were retrospectively analyzed for cardiac effects. Sinus bradycardia (SB) is a known side effect of crizotinib. Pretreatment heart rate (HR) was compared with the lowest value observed during treatment. Bradycardia (HR<60 beats per minute [bpm]) was observed in 41.9% (n=441) patients. 26 had < 45 bpm, 83 had 45-49 bpm, and 332 had 50-59 bpm. SB was more common in people with a lower baseline mean HR (82 vs 93) with a mean decrease of 30 bpm in those who developed SB vs 21 in those who did not. Age >65, ECOG PS 0/1, and non-Asian ethnicity may predispose people to SB as well as taking crizotinib for a longer duration. Also concurrent beta-blockers may accentuate this effect. These patients were asymptomatic and in general this did not impair their ability to take the medication. The rate of beta blocker discontinuation was not documented.

Pharmacokinetics (PK) of eribulin mesylate with normal and impaired renal function (Abstract 2695) –

In an open label Phase I trial of eribulin for advanced or metastatic solid tumors PK and safety parameters were compared between individuals with normal renal function (>80 mL/min), moderately impaired (30-50 mL/min), and severely impaired (15-29 mL/min). N=19 (6 normal, 7 moderate, and 6 severe with 12 subjects being female). Normal received 1.4 mg/m² day 1 and 8, while moderate received 1.1 mg/m² and severe received 0.7 mg/m² at the same frequency. Moderate and

severely renal impaired individuals had higher plasma concentrations and AUC exposure but no change in elimination half-life. There was no difference in adverse events (AE) between groups and no unexpected AEs. Based on actual findings a normalized dosing of 1 mg/m² on day's 1 and 8 has been suggested for patients with moderate or severe renal impairment. No projections were made for possible dosing in patients < 15 mL/min or on dialysis.

NEPA (combination of oral netupitant and palonosetron) efficacy in multiple cycles (Abstract 9502).

An extension study of prior trials (n=1286, 5969 total cycles) using the NEPA combination to assess its effects in cycles 2 through 4 of primarily AC chemotherapy for breast cancer (98% female) compared to oral palonosetron alone. A significant benefit was seen for the NEPA combination over oral palonosetron for preventing emesis and significant nausea (> 25/100 mm visual analogue scale) for cycles 1-4. No significant difference was seen in adverse events between arms. Netupitant is an NK1 antagonist with a long half-life (90 hr.) and similar drug interaction issues as oral aprepitant. The combination of it with oral palonosetron is expected to be available for use by the end of 2014 in the United States.

Aprepitant versus metoclopramide for preventing cisplatin-induced delayed emesis (Abstract 9503)

When aprepitant (A) was approved for prevention for cisplatin-induced delayed nausea it was never compared vs metoclopramide (M) plus dexamethasone (D), the historical standard of care for many countries for days 2-4 after cisplatin. The Italian group for antiemetic research performed a randomized, double blind, study of A 80 mg orally (PO) on days 2 and 3 plus 8 mg D PO daily days 2-4 vs M 20 mg PO 4 times daily plus D

8 mg PO twice daily on days 2-4 after both arms received A 125 mg PO, palonosetron 0.25 mg intravenously, and D 12 mg PO on day 1. 303 patients of a required 480 were enrolled prior to the study closing due to accrual problems. Arms were well matched except for more metastatic disease in the A arm. The analysis of 284 eligible patients showed no significant difference between arms in control of emesis or nausea or differences in adverse events. When the power calculation was redone for a 12% vs a 15% difference between groups the metoclopramide arm showed as significantly better in the primary and most secondary endpoints. Given the expectation of a 15% difference was generous this verifies that metoclopramide on days 2 and 3 represent a similarly effective and significantly less expensive method of preventing delayed emesis.

There are additional abstracts and many of the accompanying posters available via the virtual meeting on the ASCO web site at www.asco.org/ Also there is a slide library available for this year and last year's posters which has the complete slide deck of some presentations. Both of these access methods require a subscription. I hope you find this information useful for your practice.

Joseph (Joe) Bubalo, PharmD

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PLENARY SESSION

Abstract LBA1 Randomized comparison of adjuvant aromatase inhibitor (AI) exemestane (E) plus ovarian function suppression (OFS) vs tamoxifen (T) plus OFS in premenopausal women with hormone receptor-positive (HR+) early breast cancer (BC): Joint analysis of IBCSG TEXT and SOFT trials.

During this session the results of combined analysis of the TEXT and SOFT protocols were presented. Both the Tamoxifen and Exemestane Trial (TEXT) and the Suppression of Ovarian Function Trial (SOFT) protocols were designed to determine optimal endocrine therapy for premenopausal women with early breast cancer. The TEXT protocol enrolled 2,672 women and the SOFT protocol accrued 3,066 women, all were premenopausal and all had hormone receptor positive (HR+) early breast cancer. In the TEXT protocol, women were randomly assigned within 12 weeks of surgery to 5 years of exemestane and ovarian function suppression (OFS) or tamoxifen and OFS. In the SOFT protocol women were randomly assigned to 5 years of exemestane plus OFS, tamoxifen plus OFS, or tamoxifen monotherapy, either within 12 weeks of surgery if no chemotherapy was planned, or within 8 months of completing adjuvant or neoadjuvant chemotherapy. At median follow-up of 5.7 years, disease-free survival was 91.1% for the exemestane plus OFS group and 87.3% for the tamoxifen plus OFS group. In the TEXT protocol, 97.6% were disease free at 5 years compared with 94.6% of the tamoxifen plus OFS group (HR 0.41, 95% CI [0.22-0.79]). Similarly, in the SOFT protocol, 97.5% exemestane plus OFS compared with 94.8% tamoxifen plus OFS of participants were disease-free at 5 years (HR 0.53, 95% CI [0.26-1.06]). Depression was observed in

50% of the women enrolled in the two trials. In conclusion, exemestane plus OFS is a new treatment option for premenopausal women with HR+ breast cancer. Some women in this patient population have an excellent prognosis and endocrine therapy alone is highly effective.

Abstract LBA2 Impact on overall survival (OS) with chemohormonal therapy versus hormonal therapy for hormone-sensitive newly metastatic prostate cancer (mPrCa): An ECOG-led phase III randomized trial.

CHAARTED = Chemohormonal Therapy versus Androgen Ablation Randomized Trial for Extensive Disease in Prostate Cancer This phase III study found that starting chemotherapy along with hormone therapy in men with newly diagnosed hormone-sensitive prostate cancer improved overall survival (OS) by more than 13 months in comparison with hormone therapy alone. The survival benefit was even greater in men with high-volume disease. The trial compared “upfront” chemotherapy plus androgen deprivation therapy (ADT) to ADT alone in men with metastatic prostate cancer. Between July 2006 and November 2012, 790 men were randomly assigned to a maximum of six cycles of docetaxel plus ADT or ADT alone. Patients were stratified by extent of metastatic disease as high-volume or low-volume; high volume was defined as visceral metastasis and/or four or more bone metastases. Median OS was 57.6 months in the ADT plus docetaxel arm and 44.0 months in the ADT arm (hazard ratio [HR] 0.61, 95% CI [0.47, 0.80]; $p = 0.0003$). In men with high-volume disease, median OS was 49.2 months with docetaxel plus ADT compared with 32.2 months with ADT, a difference of 17 months (HR 0.60, 95% CI [0.45, 0.81]; $p = 0.0006$). In men with low-volume disease, median OS had not been reached at

the time of the analysis. The regimen of docetaxel plus ADT was beneficial in all subgroups analyzed. Median time to clinical progression was greater in the docetaxel plus ADT arm (32.7 months) than the ADT-only arm (19.8 months; HR 0.49, 95% CI [0.37, 0.65]; $p < 0.0001$). Similarly, the median time to clinical progression in castration-resistant prostate cancer was 20.7 months in the docetaxel plus ADT arm compared with 14.7 in the ADT-only arm (HR 0.56, 95% CI [0.44, 0.70]; $p < 0.0001$). Regarding toxicity, 6% of men receiving the chemohormonal regimen experienced febrile neutropenia, 1% experienced significant effects on sensory nerves and 1% on motor nerves, and 1 of the 397 patients who received early docetaxel died as a result of treatment. There were 101 deaths in the ADT plus docetaxel arm, compared with 136 deaths in the ADT arm. Despite the good results, there is insufficient evidence with a median 29 months of follow-up to recommend that low-volume patients with castration-sensitive disease undergo early docetaxel therapy, and there is a need to optimize the distinction between those who benefit from chemotherapy and those who do not.

Abstract LBA3 - CALGB/SWOG 80405: Phase III trial of irinotecan/5-FU/leucovorin (FOLFIRI) or oxaliplatin/5 FU/leucovorin (mFOLFOX6) with bevacizumab (BV) or cetuximab (CET) for patients (pts) with KRAS wild-type (wt) untreated metastatic adenocarcinoma of the colon or rectum (MCRC).

Bevacizumab or Cetuximab with FOLFOX or FOLFIRI Offer Similar, Extended Survival in Metastatic Colorectal Cancer.

Bevacizumab or cetuximab, in combination with either FOLFOX or FOLFIRI chemotherapy regimens, offer similar effective overall survival outcomes in patients with metastatic

colorectal cancer (CRC) and no KRAS mutations, according to results from this large phase III trial. The trial established a new benchmark in median overall survival (OS) in this setting, at approximately 29 months. The CALGB/SWOG 80405 study began in 2004, included 1,137 patients who were previously untreated. When the trial began, patients were unselected for KRAS status, and a combination bevacizumab/cetuximab arm was included. This design was later amended to focus on patients without KRAS mutations, and only those patients originally enrolled who were KRAS wild-type were included (333 patients), along with the post-amendment accrual (804 patients). The combination arm was discontinued. All patients first were stratified to either FOLFOX (leucovorin/5-fluorouracil/oxaliplatin) or FOLFIRI (leucovorin/5-fluorouracil/irinotecan) based on physician preference. They were then randomly assigned to receive either bevacizumab or cetuximab. In this study, 73% of patients received FOLFOX and 27% received FOLFIRI. The OS in the bevacizumab and chemotherapy group was 29.0 months, compared with 29.9 months in the cetuximab and chemotherapy group, for a hazard ratio (HR) of 0.925 (95% [CI 0.78-1.09]; $p = 0.34$). Regarding toxicity, the most frequent grade 3 or higher toxicities associated with bevacizumab included hypertension (7%) and gastrointestinal events (2%); for cetuximab these included acne-like rash (7%) and diarrhea (11%). Only 29.6% of the full cohort discontinued treatment because of progressive disease, with adverse events/withdrawal/change in therapy accounting for another 55.5% of discontinuations.

Highlights in Pediatric session

COG Study Establishes New Standard of Care for Rare Pediatric Soft Tissue Sarcomas

The first study conducted in childhood non-rhabdomyosarcoma soft tissue sarcomas (NRSTS) since the mid-1990s defined a new treatment algorithm for pediatric patients by

identifying distinct prognostic groups that dictate therapy selection. With this result it is possible to establish that certain low-risk subsets of patients can be treated safely with surgery alone and that radiotherapy can be used less frequently and at lower doses without compromising outcomes in patients with intermediate and high-risk disease. RST0332 constitutes the first comprehensive evaluation of pediatric NRSTS across the disease spectrum. Patients ranged in age from infancy to young adulthood with a median age of 13.7 (range 0.1-29.8 years), all histologic subtypes were represented, and both localized and metastatic disease were permitted. Tumor grade, size, resection potential, and extent of disease were used to assign patients newly diagnosed with NRSTS into one of four groups that dictated increasingly aggressive treatment. Patients with low-risk disease received surgery alone (38%) or had adjuvant radiotherapy added (4%). Intermediate-risk disease was managed with adjuvant chemoradiotherapy (22%), whereas high-risk disease was managed with neoadjuvant chemoradiotherapy (36%). Four-year overall survival reached rates of 97%, 100%, 80%, and 63% in patients treated with surgery alone, adjuvant radiotherapy, adjuvant chemoradiotherapy, and neoadjuvant chemoradiotherapy, respectively. No patients in the study died as a result of toxicity, although 10 patients (2%) did experience unexpected grade 4 adverse events.

Clinical Problems in Oncology

Optimizing the use of new targeted therapies in the face of toxicity. New targeted therapies are associated with unique toxicities that require specific management strategies and an educated multidisciplinary team to optimize outcomes.

Firstly, how PI3 kinase (PI3K) inhibitors affect glucose homeostasis was discussed. The PI3K pathway plays an important role in the metabolic and mitogenic activity of insulin and insulin-like growth factor. Thus, agents that

inhibit the PI3K/AKT/mTOR pathway are associated with hyperglycemia, which is an on-targeted effect. If patients develop PI3K-induced hyperglycemia, prompt initiation of glucose-lowering therapy is recommended to prevent subacute complications of sustained hyperglycemia. The type of therapy used depends on the severity, duration, and pattern of symptoms. Therapeutic options include metformin or combination therapy with glimepiride and pioglitazone or a DPP-4 inhibitor. Acutely ill and hospitalized patients may need insulin. Special attention should be given to patients at high risk, including patients with diabetes and those without diabetes but with other high-risk features. This group may require careful monitoring.

Secondly, toxicities associated with MEK inhibitors, BRAF inhibitors, and with combinations of MEK and BRAF inhibitors were reviewed. An important cutaneous toxicity associated with MEK inhibitors is an acneiform rash, which develops in approximately 80% of patients emerging after a median of 12.5 days of therapy. The rash is often managed using a topical antibiotic and an oral antibiotic, if necessary. Other toxicities associated with MEK inhibitors include diarrhea and peripheral edema. Skin toxicities are common with BRAF inhibitors, with up to one-half of patients developing rash. Management may include topical steroids or, if severe, drug interruption, dose reduction, and oral steroids. To reduce the risk of photosensitivity with vemurafenib, patients should take precautions, including the use of a broad-spectrum UV sunscreen and other sun protection measures. Another BRAF inhibitor, dabrafenib, is associated with a risk of developing Grover's disease. Other cutaneous toxicities that are observed with BRAF inhibitors are palmar-plantar hyperkeratosis, verrucal keratosis, pilosebaceous follicular changes, hair changes, and cutaneous squamous cell carcinoma (which is treated with excision). Noncutaneous toxicities associated with BRAF inhibitors include arthralgia, liver enzyme elevations, and pyrexia.

Lastly, information about autoimmune toxicities associated with immune checkpoint inhibitors, including PD-1/PD-L1-targeting and CTLA-4-blocking agents were presented. The autoimmunity associated with these agents can affect any organ system, resulting in a range of effects throughout the body, including among others dermatitis, enterocolitis, pneumonitis, hepatitis, pancreatitis, neuropathy, and hypophysitis. Early recognition, evaluation, and treatment are critical for patient safety. These adverse effects can develop at any time, as early as the first dose and as late as months after discontinuing therapy. In general, management of autoimmune toxicity depends on the severity and may include supportive care, drug interruption or discontinuation, and use of corticosteroids.

Annemeri Livinalli

Grupo em Defesa da Criança com Cancer, GRENDACC, Brazil



ISOPP XV

Sulamita Miranda Nam from the Oncology Pharmacy Chapter of the Chilean Society of Oncology invites all ISOPP members to attend ISOPP XV in 2016 in Santiago Chile. Location: the Hotel Sheraton



Contact the Newsletter Editor via jill.davis5@bigpond.com

A Focus on Education at the British Columbia Cancer Agency, Canada

Lynne Nakashima, BScPharm, PharmD

Pharmacy Professional Practice Leader, BC Cancer Agency, Vancouver Centre

The British Columbia Cancer Agency (BCCA) is a province-wide, population-based cancer control program for the residents of British Columbia and the Yukon in Canada. These services are provided through six regional cancer centres (the only locations in the province where radiation therapy is available), and the Communities Oncology Network (CON). The CON is a collaborative partnership with 19 community-based cancer centres, six community based cancer services, and ten consultative clinics across the province. The network also supports appropriate delivery of patient care and support in 27 other community hospitals.

Pharmacy services are a core component of the care of the oncology patient, but pharmacy education in the oncology specialty area is still a work in progress. Pharmacists at the BCCA are involved in education, starting at the undergraduate and graduate level and continuing with the BCCA residency program and finally to education of Pharmacists working in the field.

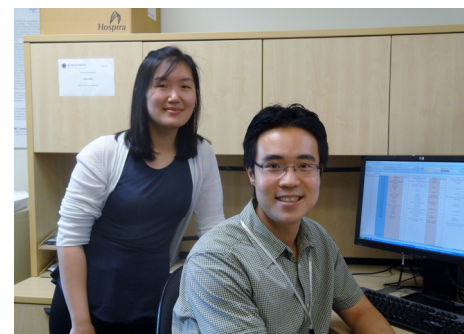
At the undergraduate level, Dr. Shirin Abadi is involved in teaching the unit on oncology. This is the first exposure of pharmacy students to oncology. The BCCA Pharmacists, including Dennis Jang, Dr. Mario de Lemos, James Conklin, Louisa Pang and myself, in conjunction with some off-site colleagues, also coordinate and teach the oncology elective course on oncology for third and fourth year students. This course provides didactic learning in both tumour site and supportive care topics, and gives the students the opportunity to discuss case studies, evaluate an article and visit the BCCA to complete a clinical work-up of a patient. The Vancouver

Centre offers a summer studentship program where students work as a Pharmacy Assistant and have the opportunity to complete a professional practice project. The Victoria, Fraser Valley, Kelowna and Abbotsford sites also accept students for their hospital rotation. BCCA Pharmacists are also involved in teaching in the Doctor of Pharmacy program, both in didactic sessions and on rotation.



Shirin Abadi

Upon completion of their degree, new Pharmacists have the opportunity to apply for the BCCA Pharmacy Practice Residency Program. This one year program provides an experiential learning opportunity designed to allow the resident to refine their direct patient care, leadership and research skills in the oncology setting. This residency is a provincial program and gives the residents opportunities to do rotations in all of the BCCA sites. This year's residents are Leanne Leung and Aaron Sha.



Leanne and Aaron

Many Pharmacists start working in the oncology field with very little training or expertise. Recognizing this, the BCCA CON Pharmacy Educators, Lynne Ferrier, Rhonda Kalyn and Mandeep Bains, developed an education plan designed to allow for self-study in key topic areas. In addition, Lynne, Rhonda and Mandeep make site visits to the sites treating cancer patients, provide in-services and answer drug information questions. Site visits to the BCCA are also offered. This support helps enable Pharmacists to further their education and ensure safe patient care.



Lynne, Rhonda and Mandeep

And finally, the staff in our regional cancer centres themselves, show a strong commitment to continuing education. They attend continuing education seminars, participate in webinars, and attend conferences to further their education. They also participate in giving educational seminars themselves, to share the information that they have learned. Education is a shared responsibility. As a Pharmacist, it is part of the commitment to life-long learning that we make when we first become licensed. But as an organization, we also need to support the staff in ensuring that there are opportunities to continue to learn and to grow in our profession. The BCCA has taken an approach to participate, learn and instruct in educational opportunities from pharmacy students to seasoned specialists and it is an approach that truly helps us to meet our mandate to provide the best possible care for our patients around the province.

Canada Preceptorship

Shaun O'Connor
ISOPP Secretariat Member
St. Vincent's Hospital Melbourne,
Australia

At ISOPP XIV in Montreal in April this year, Rick Abbott from Dr. H. Bliss Murphy Cancer Centre in St John's, Newfoundland, Rachel Gilbert from HumanEra in Toronto, Ontario and Roxanne Dobish from Cross Cancer Institute (CCI) in Edmonton, Alberta, Canada, presented on lean processes and human factors in the Chemotherapy Day Unit (CDU). Currently, St. Vincent's Hospital in Melbourne is undergoing an 18 month redesign of the CDU to improve the patient experience by increasing efficiency and reducing waiting times. This presented an opportunity for a preceptorship to allow for learning opportunities from the Canadian experience to be brought back to St Vincent's and integrated into the redesign.

This two week visit was an invaluable opportunity, enabling me to look in "from the outside" at processes in a very different environment and has allowed me to bring back several concepts for use in our redesign at St. Vincent's. It was very interesting to see small differences in the way clinics and treatments are scheduled and the

flow-on effects from those choices impacting pharmacy workload. Some innovative tools have been developed to both streamline and level the workload as well as provide extra patient safety by incorporating human factors design into CDU processes. St John's have developed a visual tracking tool that allows for information on timeliness of pharmacy processes to be visualised instantaneously, as well as separating out individual products from a protocol with CCI developed worksheets with input from human factors experts (Rachel Gilbert et al.) that allow for greater standardization and patient safety.

This preceptorship was made possible through the Mary Wood Scholarship, honouring Mary, a beloved pharmacist who worked at St. Vincent's Hospital in Melbourne, Australia, where she mentored and encouraged young pharmacists to experience the world. I would also like to thank Rick, Rachel, Roxanne and their respective teams for being wonderful hosts and enabling this insightful experience.



Future meetings

| Name | Date and Location | Further details |
|--------------------|--|---|
| 17th BOPA | 17-19 October 2014 Birmingham UK | www.bopawebsite.org/symposium |
| ESOP Masterclasses | 3-7 November 2014 Istanbul, Turkey | www.esop.eu/ |
| BOPP Days | 23-24 January 2015 Blankenberge Belgium | Contact Tiene Bauters Tiene.bauters@uzgent.be |
| NZW | 23-25 January 2015 Hamburg, Germany | www.esop.eu/ |
| HOPA | 25-28 March 2015 Austin, Texas, USA | |
| CAPhO | 21-24 May 2015 St. John's, Newfoundland | www.capho.org |
| ISOPP XV | April 2016 Santiago, Chile | www.isoppxiv.org |