Makati Medical Center Pioneers in Cardio-Oncology Training in the ASEAN Region

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ABSTRACT

Like in most other countries where the COVID-19 pandemic decimated lives and paralyzed economies, the Philippines was hit hard by the COVID-19 pandemic. The impact of the pandemic on a global scale and the worsening epidemic of cancer treatment-related CV toxicities were equally devastating. However, this did not hinder the Section of Cardiology in Makati Medical Center (MMC) to pursue the vision of putting up a new training program. Recognizing the burden of cancer in the country and the emerging need for a discipline that encompasses the diagnosis and treatment of cancer and its impact on cardiovascular health, steps were to put up a program that addresses this complex issue - in the midst of a pandemic.

In February 2022, the Section of Cardiology communicated its plans to the leadership of the Philippine Heart Association (PHA) who recognized the initiative as basically aligned with the objectives of the Council on Cardio-Oncology to strike a balance between cancer treatments and CV morbidities. Being the pioneer training program for CO in the country, not only was the program recognized, but was also extolled as "another milestone in Philippine Cardiology".

The training commenced last August 2022 with two trainees who were warmly received not only by the PHA and the MMC Community, but by the ICOS leadership and component ICOS chapter leaders as well. Executive Director, Stephen Casselli through his invaluable endorsement and support for the program, made the observership rotation possible with the different ICOS chapters.

The burden of cancer

Cancer has been a major public health problem worldwide. In 2020, there were ~19.3M new cancer cases and ~10M cancer deaths worldwide.[1] Breast cancer is the most commonly diagnosed cancer, with ~2.3M new cases (11.7%), followed by lung (11.4%), colorectal (10%), prostate (7.3%), and stomach (5.6%) cancers.[1] While Asia had over ~9.5M new all-cancer cases with an age-standardized rate of ~169 per 100,000 accounting close to 50% of the global cancer incidence, the International Agency for Research on Cancer (World Health Organization) accounts.[2-3]

In 2022, the three most common causes of death were topped by ischemic heart disease, cerebrovascular disease and cancer.[4] The National Institutes of Health revealed that ~189 of every 100,000 are affected by cancer with four Filipinos dying of cancer every hour.[4] And according to the 2020 GLOBOCAN data, the top five incidental cancers by cancer site in the Philippines are: breast (17.1%), lung (12.5%), colon (7.4%), liver (6.9%) and prostate (5.4%);5 whereas the five most common causes of mortality by cancer site are: lung (18.4%), liver (10.7%), breast (10.7%), colon (6.6%) and leukemia (4.7%) (see Figure 1).[5]

Eala and colleagues (2022) reports that the Philippines has a total of the following cancer care providers: 348 medical oncologists, 164 surgical oncologists, 142 gynecologic oncologists, 99 radiation oncologists, 35 hospice and palliative medicine specialists.[6] Latest statistical data shows that the Philippines hosts to a population of 110 million;[6] for every 100,000 Filipinos, there are 0.32 medical oncologists, 0.15 surgical oncologists, 0.13 gynecologic oncologists, 0.09 radiation oncologists, and 0.03 hospice and palliative medicine specialists.[6]

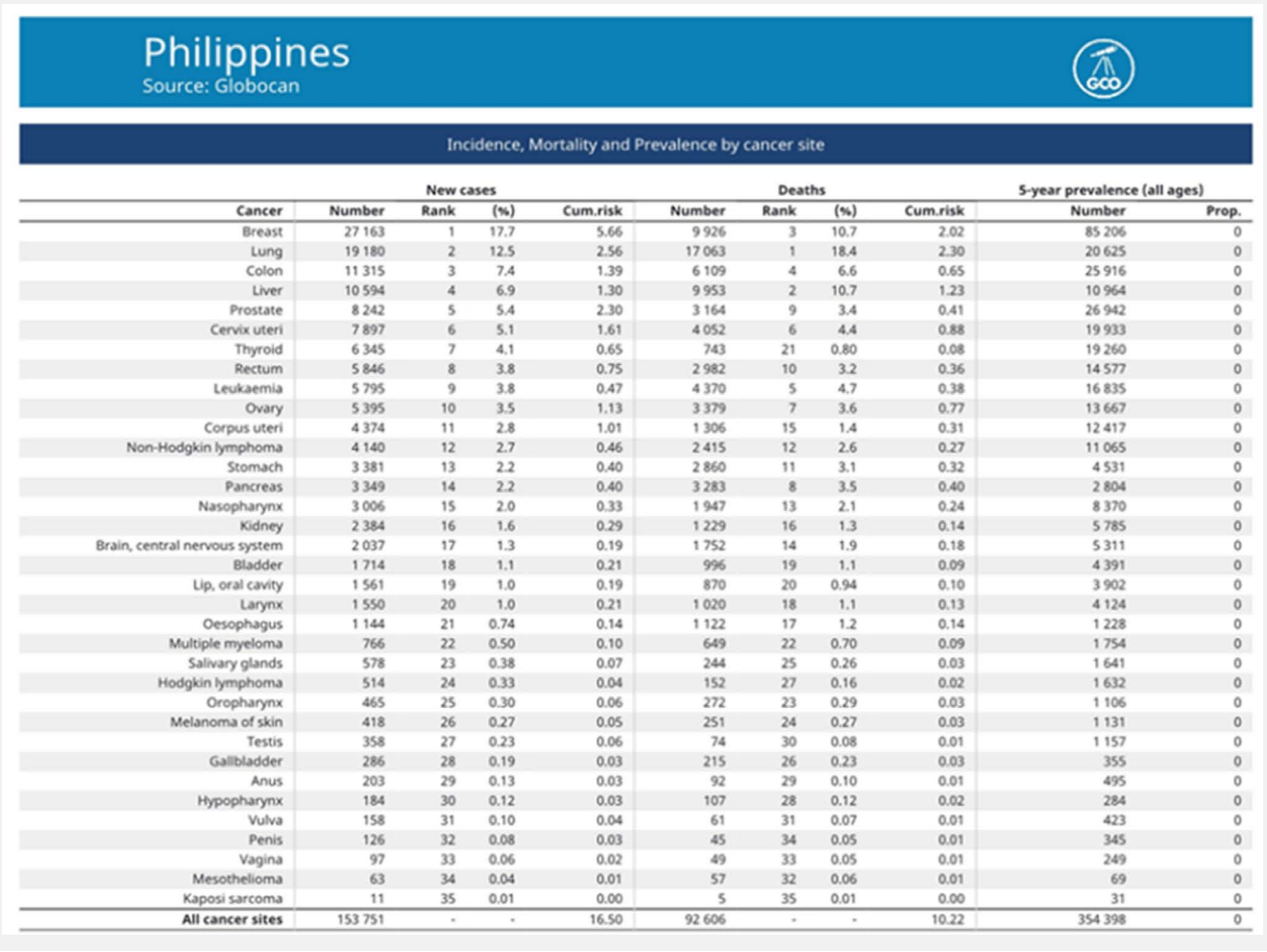
Cancer care providers in the Philippines

Despite these numbers, the healthcare providers specifically dealing with cancers remain scarce. Eala and colleagues (2022) reported that the Philippines has a total of the following cancer care providers: 348 medical oncologists, 164 surgical oncologists, 142 gynecologic oncologists, 99 radiation oncologists, 35 hospice and palliative medicine specialists.[6]

The exponential growth of cancer patients has necessitated advancement in cancer treatment where breakthroughs have eventually contributed to the substantial decline in cancer related deaths.[7] However this benefit is linked to a steady rise in cardiovascular (CV) toxicity developing during or after cancer therapy and has become a major cause of morbidity and mortality among cancer patients.[7]

Cardio-oncology (CO) is an evolving medical discipline in cardiology that focuses on the prevention, detection, monitoring, and treatment of CV disease occurring as a side effect of cancer treatments.[8] The lack of educational opportunities and infrastructures, limited interests and absence of funding were the specific barriers identified in the National Cardio-Oncology Survey spearheaded by the American College of Cardiology (ACC).[7] Numerous programs have been developed to meet these challenges but which have remained confined to larger institutions where academic centers play critical roles.[8]

Figure 1: GLOBOCAN 2020 estimates of incidence and mortality for 35 cancers in the Philippines.[5]



Philippines
Source: Globocan

Incidence, Mortality and Prevalence by cancer site

	New cases				Deaths				5-year prevalence (all ages)	
Cancer	Number	Rank	(%)	Cum.risk	Number	Rank	(%)	Cum.risk	Number	Prop.
Breast	27 163	1	17.7	5.66	9 926	3	10.7	2.02	85 206	0
Lung	19 180	2	12.5	2.56	17 063	1	18.4	2.30	20 625	0
Colon	11 315	3	7.4	1.39	6 109	4	6.6	0.65	25 916	0
Liver	10 594	4	6.9	1.30	9 953	2	10.7	1.23	10 964	0
Prostate	8 242	5	5.4	2.30	3 164	9	3.4	0.41	26 942	0
Cervix uteri	7 897	6	5.1	1.61	4 052	6	4.4	0.88	19 933	0
Thyroid	6 345	7	4.1	0.65	743	21	0.80	0.08	19 260	0
Rectum	5 846	8	3.8	0.75	2 982	10	3.2	0.36	14 577	0
Leukaemia	5 795	9	3.8	0.47	4 370	5	4.7	0.38	16 835	0
Ovary	5 395	10	3.5	1.13	3 379	7	3.6	0.77	13 667	0
Corpus uteri	4 374	11	2.8	1.01	1 306	15	1.4	0.31	12 417	0
Non-Hodgkin lymphoma	4 140	12	2.7	0.46	2 415	12	2.6	0.27	11 065	0
Stomach	3 381	13	2.2	0.40	2 860	11	3.1	0.32	4 531	0
Pancreas	3 349	14	2.2	0.40	3 283	8	3.5	0.40	2 804	0
Nasopharynx	3 006	15	2.0	0.33	1 947	13	2.1	0.24	8 370	0
Kidney	2 384	16	1.6	0.29	1 229	16	1.3	0.14	5 785	0
Brain, central nervous system	2 037	17	1.3	0.19	1 752	14	1.9	0.18	5 311	0
Bladder	1 714	18	1.1	0.21	996	19	1.1	0.09	4 391	0
Lip, oral cavity	1 561	19	1.0	0.19	870	20	0.94	0.10	3 902	0
Larynx	1 550	20	1.0	0.21	1 020	18	1.1	0.13	4 124	0
Oesophagus	1 144	21	0.74	0.14	1 122	17	1.2	0.14	1 228	0
Multiple myeloma	766	22	0.50	0.10	649	22	0.70	0.09	1 754	0
Salivary glands	578	23	0.38	0.07	244	25	0.26	0.03	1 641	0
Hodgkin lymphoma	514	24	0.33	0.04	152	27	0.16	0.02	1 632	0
Oropharynx	465	25	0.30	0.06	272	23	0.29	0.03	1 106	0
Melanoma of skin	418	26	0.27	0.05	251	24	0.27	0.03	1 131	0
Testis	358	27	0.23	0.06	74	30	0.08	0.01	1 157	0
Gallbladder	286	28	0.19	0.03	215	26	0.23	0.03	355	0
Anus	203	29	0.13	0.03	92	29	0.10	0.01	495	0
Hypopharynx	184	30	0.12	0.03	107	28	0.12	0.02	284	0
Vulva	158	31	0.10	0.04	61	31	0.07	0.01	423	0
Penis	126	32	0.08	0.03	45	34	0.05	0.01	345	0
Vagina	97	33	0.06	0.02	49	33	0.05	0.01	249	0
Mesothelioma	63	34	0.04	0.01	57	32	0.06	0.01	69	0
Kaposi sarcoma	11	35	0.01	0.00	5	35	0.01	0.00	31	0
All cancer sites	153 751	-	-	16.50	92 606	-	-	10.22	354 398	0

The specific goal of the field of Cardio-Oncology is reducing the escalating burden of CV complications both among cancer survivors and those receiving treatment while allowing minimal interruptions in cancer therapy (traditional systemic chemotherapy, targeted molecular therapies, hormone therapy, immunotherapy or radiotherapy).[9] In August 2018, the European Society of Cardiology (ESC) established the Council of Cardio-Oncology where prevention, early diagnosis and management of cancer therapy-related CV diseases were the key driving concepts.[10]

Cardio-Oncology in the Philippines; the birth of the CO Council

The Philippine Heart Association (PHA) board through the President, Jorge A. Sison, MD, aligned its programs with the ESC and also created three additional councils in 2018, one of which was the Council on Cardio-Oncology with a mission to promote optimal CV care among Filipino patients with cancer and the vision of becoming an Asia Pacific leader in purveying optimal CV care to cancer patients by 2028.[11] One of the major thrusts of the Council was to increase awareness about the different cardiotoxic effects of anticancer therapy. The Council spearheaded several interactive conferences (i.e., cardiovascular travelogues) and many other activities engaging different medical specialties (medical oncology, hematology, gynecology and surgery) and the allied health professions.

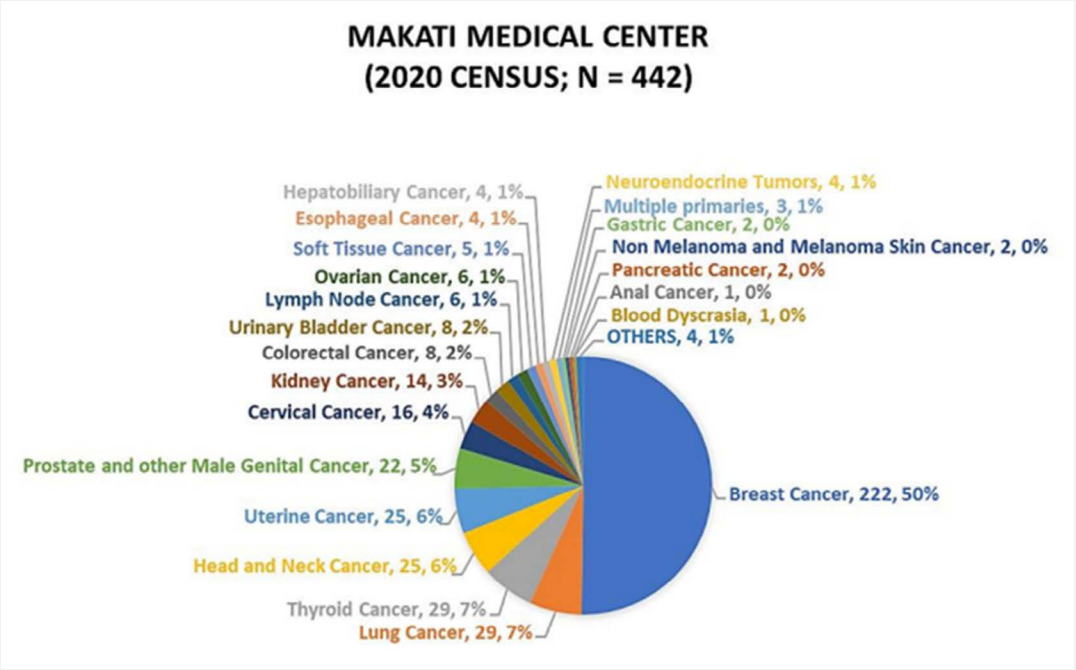
Pioneering a training program amid a pandemic

Like in most other countries where the COVID-19 pandemic decimated lives and paralyzed economies, the Philippines was hit hard by the COVID-19 pandemic. The impact of the pandemic on a global scale[12] and the worsening epidemic of cancer treatment-related CV toxicities were equally devastating.

However, this did not hinder the Section of Cardiology in Makati Medical Center (MMC) to pursue the vision of putting up a new training program. Dr. Saturnino P. Javier, MMC Medical Director and Chief of the Section of Cardiology, conceptualized the establishment of a formal Cardio-Oncology (CO) training in the Philippines in the latter quarter of 2021.

Through the years, MMC has been providing specialized care to its cancer patients. In the 2020 CARE PH annual report, the top five cancers by cancer site in MakatiMed were: breast (50%), lung (7%), thyroid (7%), head and neck (6%), uterine (6%), and prostate (5) (see Figure 3).[5] Recognizing the burden of cancer in the country and in its own community, and the recognized emerging need for a discipline that encompasses the diagnosis and treatment of cancer and its impact on cardiovascular health, Dr. Javier immediately took steps to put up a program that addresses this complex issue - in the midst of a pandemic.

Figure 3: 2020 Cancer Census at Makati Medical Center.[5]



The association recognized the initiative as basically aligned with the objectives of the Council on Cardio-Oncology to strike a balance between cancer treatments and CV morbidities. Being the pioneer training program for CO in the country, the program was not only recognized but was also extolled as "another milestone in Philippine Cardiology" by Raul L. Lapitan, MD, the Chair of the Specialty Board of Adult Cardiology of the Philippine College of Cardiology, and Gilbert C. Vilela, MD, the President of the PHA.

After initial presentation to the Section of Cardiology in Makati Medical Center and after several virtual sessions of planning and brainstorming with a core group of cardiologists (Valerie R. Zarza-Geron, MD, Joel A. De la Rosa, MD and Paul C. Quetua, MD), Dr. Javier presented the general plans and curriculum to the other sections and departments which will be involved in the new training program. He received enthusiastic support from Dr. Ma. Belen E. Tamayo [Medical Oncology], Dr. Victor K. Gozali, Dr. Jackson U. Dy of Radiology, Dr. Jesus A. Relos of Hematology. Most importantly, the Management under Atty. Pilar Nenuca P. Almira (President and CEO) envisioned that MMC should pioneer in those disciplines where MMC had no expertise yet.

In February 2022, the Section of Cardiology through its chief, Dr. Javier, communicated its plans to the leadership of the PHA which fundamentally oversees all cardiology training programs in the Philippines.

Makati Medical Center - the birthplace of Cardio-Oncology training in the Philippines

Makati Medical Center (MMC) is a premier tertiary hospital in the Philippines for over 50 years (see Figure 2).[13] A 600-bed tertiary facility in Metro Manila, it is one of the pioneers and leaders in cardiovascular health care in the country and Southeast Asia.[12-14]

Figure 2: Makati Medical Center.[13]

MMC, branded as the hospital with a heart, fulfills its promise in rendering premium and personalized healthcare services.[13] It seeks to deliver quality and compassionate services through its highly skilled, competent, and board-certified physicians, nurses, allied healthcare professionals, and management staff, equipped with modern facilities and state-of-the-science medical equipment and technology.[13] It was one of the frontline institutions in the National Capital Region of the Philippines which battled the first wave of COVID-19 starting in March 2020.[12]

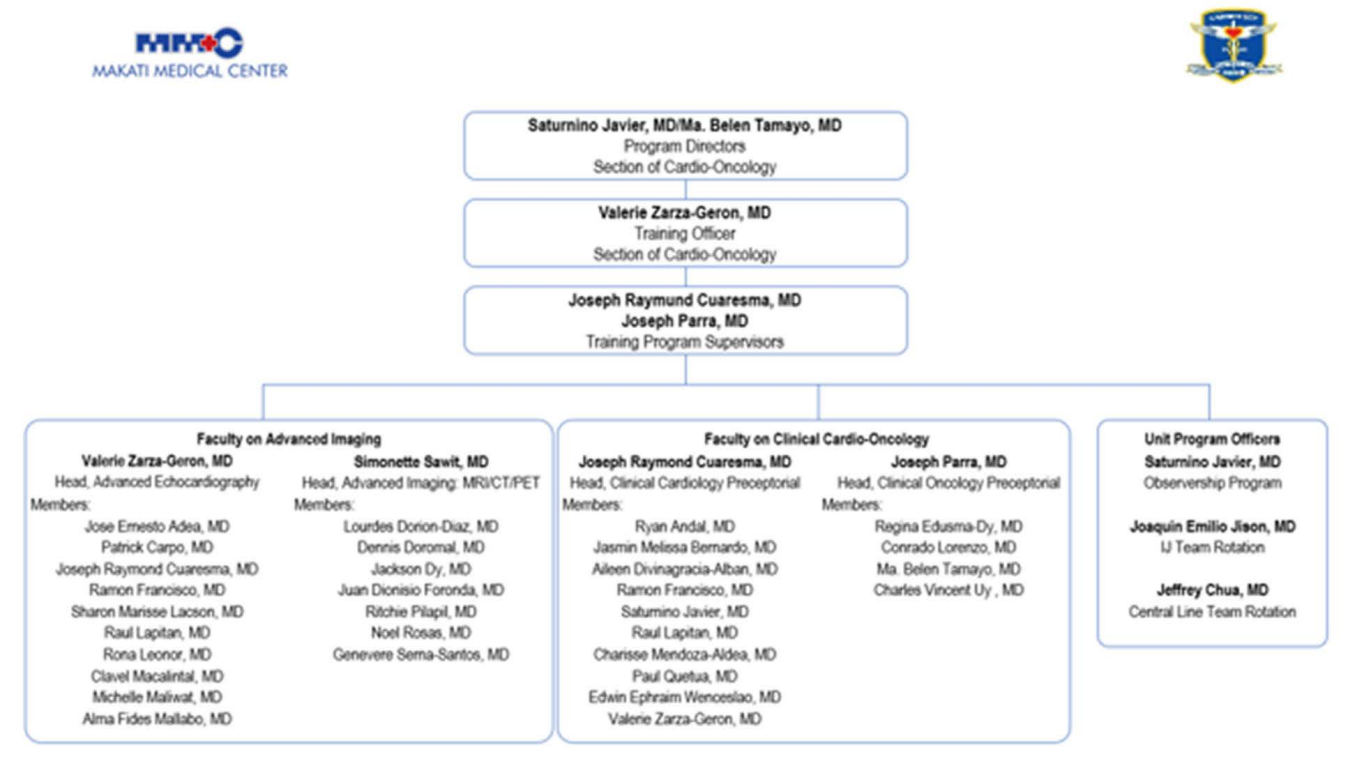
On its 50th anniversary, MMC partnered with UC Davis Comprehensive Cancer Center, one of the leading cancer centers in the United States. The agreement with the University of California included the development of an international Cancer Care Network, a cancer registry in MMC, training programs for cancer care, a second opinion program, and on-site clinical rotation from various subspecialties in oncology.[13] On November 2022, MMC was recognized as the first Cancer Specialty Center in a General Hospital in the Philippines accredited by the Department of Health.[13]

Planting the seed of the training program

In May 2022, Dr. Javier and select members of the Section of Cardiology embarked on the initial vital stages of the program, namely establishment of the organizational structure, the identification of key resource physicians, the appointment of program officers and the formulation of a structured training program curriculum. In several meetings, Dr. Javier (Cardiology/Interventional Cardiology), the program director, brainstormed with the members of the training core: Dr. Ma. Belen E. Tamayo (Medical Oncology), the program co-director; Dr. Valerie R. Zarza-Geron (Cardiology/Echocardiography), the training program officer; and Dr. Joseph Raymond M. Cuaresma (Cardiology/Echocardiography) and Dr. Joseph D. Parra (Medical Oncology), the training program supervisors.[14]

Figure 4 shows the organizational chart of the Section of Cardio-Oncology. The multidisciplinary roster of the training faculty consists of a total of 39 subspecialists who have fully expressed support and participation in the program (24 cardiologists, five medical oncologists, three hema-oncologists, two radiation oncologists, four radiologists and one peripheral vascular surgeon). Twenty of the cardiologists have further training: three in Interventional Cardiology, three in Peripheral Vascular Medicine, one in Critical Care, one in Advanced Heart Failure/Transplantation, one in Cardiac MR, two in Advanced CT, one in Nuclear Imaging, eleven in Echocardiography.[11] Close collaboration with surgical and gyne-oncology services has been pursued.

Figure 4: Organizational Chart of the Makati Medical Center Section of Cardio-Oncology.[14]



Cardio-Oncology Program Curriculum

In July 2022, a manual outlining the clinical requirements was created for the program. It sets the minimum criteria defined by the dedicated training committee.[14] The curriculum was designed to develop well-rounded cardio-oncologists, proficient in both solid and hematologic malignancies, in line with ACC Cardio-Oncology Council guidelines.[15-17] The new training program's curriculum and documentation was submitted to the Division of Medical Education and Research (DMER). Under the leadership of Dr. Maria Rosario P. Marin and Dr. Jimmy B. Aragon, the program was approved showcasing its support for the collective efforts in advancing medical education.

The training core has structured clinical rotations designed to provide a comprehensive educational experience for trainees. The program begins with a three-month segment focusing on oncology fundamentals, which covers common solid tumors and oncologic emergencies, including essential preoperative cardiac evaluations and risk assessments. This is followed by a month dedicated to hematologic malignancies.

Subsequently, the program emphasizes cardiovascular evaluations related to chemotherapy for three months. Trainees will learn various diagnostic techniques, such as echocardiography, strain imaging, exercise stress tests, angiography, advanced intravascular imaging, and hemodynamic catheterization, while also gaining insights into cancer rehabilitation. An additional two months are allocated to radiation oncology and advanced imaging modalities, including cardiac MRI, CT, PET, and nuclear perfusion imaging.

Moreover, trainees will participate in a two-month clinical research component, contributing to advancements in the field. The program concludes with a one-month elective external observership, allowing trainees to gain insights from various clinical settings. Presently, there is a memorandum of understanding between MMC and the National University Hospital Singapore (NUHS), Singapore. This well-structured rotation plan aims to furnish trainees with the critical skills and knowledge required for their future professional endeavors.

Pioneering Trainees [First Ever in the ASEAN region]

The training program commenced in August 2022, featuring two dedicated trainees: Dr. Maria Kristina Cecilia P. Ozaeta-Lorilla and Dr. Renato C. Ong Jr., both of whom are board-certified graduates in Cardiology from MMC. The two cardiologists enthusiastically embraced the Program Director's invitation to participate in this exciting inaugural initiative.

The training core maintains active communication with Dr. Maria Katrina Cruz-Tan, the current Chair of the PHA Council on Cardio-Oncology. Dr. Cruz-Tan has been a strong supporter of the program since its launch and has participated in several bi-weekly conferences as a guest reactor. The council is now organizing a forum to introduce the MMC CO training at the national level during a significant PHA conference.

In addition to fulfilling the requirements established by the DMER, trainees are also required to be certified diplomates of the Philippine College of Cardiology in order to qualify for the one-year curriculum (see Figure 5).

Networking with ICOS Community

Both clinical research fellows received a warm welcome from everyone, including the PHA and the MMC Community, as well as the leadership of ICOS and its various chapter leaders.

ICOS exists as a platform providing advanced CV care to both oncology patients and survivors through effective collaboration among researchers, educators and clinicians across diverse disciplines on a global scale with a vision to extinguish CV disease as a barrier to anyone receiving or has received cancer therapy.[18]

Executive Director, Dr. Stephen Casselli through his invaluable endorsement and support for the program, made the observership rotation possible with the different ICOS chapters [i.e., United States, Spain, United Kingdom, Germany and Australia). The trainees were likewise invited to participate in ICOS-sponsored Virtual Journal Club Meetings (see Figure 6) and Interesting Case Series Presentations.

Aligning with MMC's Mission and Vision

Accredited by the Joint Commission International, MMC offers world-class services and topnotch quality healthcare,[13] with a vision to become the Philippines' most trusted, caring and internationally recognized healthcare institution with exceptional service, expertise, and technology.[12-13] MMC has produced 66 illustrious cardiologists and is also home to 11 past presidents of the Philippine Heart Association.

Last September 2022, the MMC's Cancer Center became the first accredited Cancer Specialty Center in a tertiary hospital by the Department of Health, a testimonial to MMC's commitment in delivering quality care to Filipino patients with cancer.

The MMC Section of Cardio-Oncology is the first formal training facility in the Philippines and in Asia. As a newly minted program, all program efforts are geared towards fully nurturing the institutional ideals and core values of MMC. In keeping with the institutional mandate of acquiring and expanding the knowledge and expertise base of the medical community of MMC, this program is certainly an additional pursuit that absolutely embraces the mission of MMC to deliver the best healthcare practices guided by the most stringent and uncompromising quality and safety standards.

KEYWORDS
Cardio-Oncology, pioneer, training, Philippines.

Figure 5: Invitation Poster of the Makati Medical Center Section of Cardio-Oncology.[14]

Figure 6: Opening the ICOS Journal Club Presentation in 2023. Cardio-Oncology clinical research fellows, Dr. Ong and Dr. Ozaeta-Lorilla presented the first multicenter study on anthracycline-induced cardiotoxicity in the Philippines at the 1st ICOS Journal Club Webinar last January 5, 2023.

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