UNIVERSITY OF THE PHILIPPINES MANILA
The Health Sciences Center

INFORMATION, PUBLICATION, AND PUBLIC AFFAIRS OFFICE
8/F Philippine General Hospital Complex, Taft Avenue, Manila 1000, Philippines
Tel. (632)88141 loc. 216-219 | Email: upm-ippao@up.edu.ph

WHEN **HEROES** RISE: UP Manila Responds to Covid-19

WHEN HEROES RISE

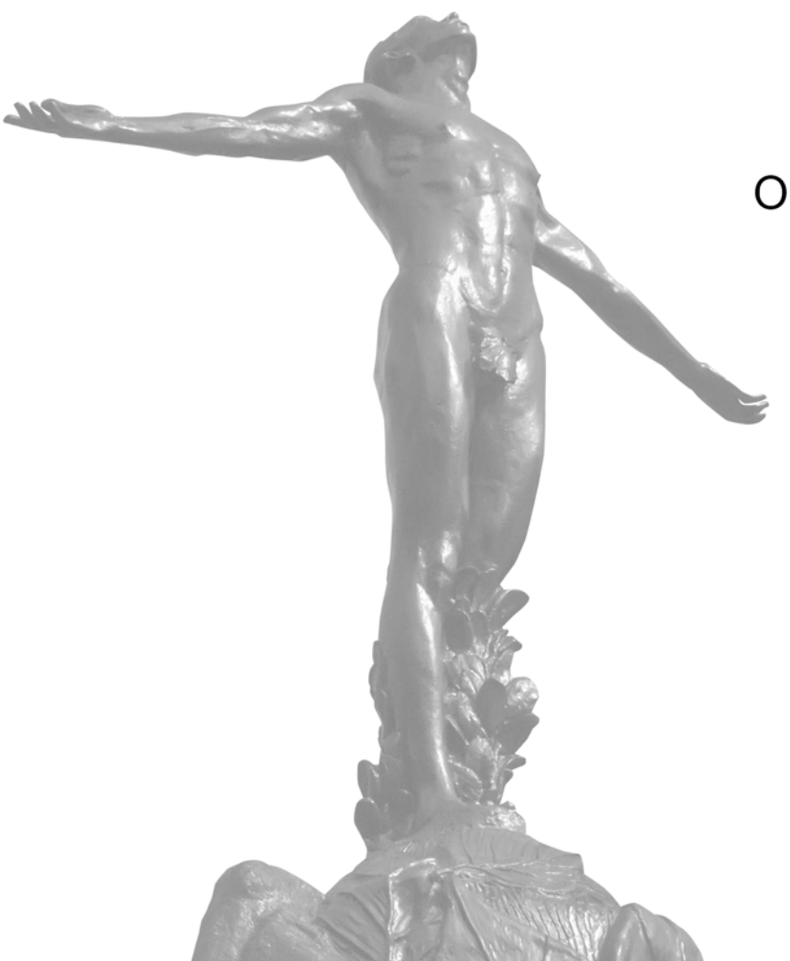
UP Manila Responds to Covid-19

Olympia Quimba Malanyaon, MD
Haziel May C. Natorilla
Cynthia M. Villamor

Prof. Jose Y. Dalisay, Jr.
Editor

WHEN HEROES RISE

UP Manila Responds to Covid-19



Olympia Quimba Malanyaon, MD
Haziel May C. Natorilla
Cynthia M. Villamor

Prof. Jose Y. Dalisay, Jr.
Editor

When Heroes Rise: UP Manila Responds to Covid-19

Copyright © 2025
Olympia Quimba Malanyaon
Haziel May C. Natorilla
Cynthia M. Villamor

Jose Y. Dalisay, Jr. - Editor

Willie D. de Vera - Cover and book designer

ALL RIGHTS RESERVED

No part of this book may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior permission in writing from the University of the Philippines Manila and the authors.

ISBN: 978-621-454-020-4

Published by the University of the Philippines Manila

Address: 8th Floor, LCB, Philippine General Hospital Compound,

Taft Avenue, Ermita, Manila, Metro Manila, 1000

Tel. No.: (02) 88141-218

Email: upm-ippao@up.edu.ph

Printed in the Philippines

CONTENTS

ABOUT THE AUTHORS

Dr. Olympia Q. Malanyaon is a pediatric cardiology specialist and professor at the UP College of Medicine and attending pediatrician at the PGH Department of Pediatrics. She served as the director of the UP Manila Information, Publication, and Public Affairs Office (IPPAO) from 2019-2023 and editor-in-chief of the UP Manila newsletter, the *Healthscape*. She was one of the editors of the *Fundamentals of Pediatrics* and one of the authors of its cardiology chapter; and she also cowrote the coffee table book, *A Century of Leadership in Philippine Child Health*. She has written several articles and research papers and edited numerous other publications in pediatric health.

Ms. Haziel May C. Natorilla is a licensed chemist, DOST scholar graduate in MS Development Communication at UP Los Banos, and a BS Biochemistry degree holder from UP Manila. She worked as science and technology communication specialist at the Department of Science and Technology before joining IPPAO of UP Manila as a project development officer from April 2022-June 2023.

Ms. Cynthia M. Villamor is a BS Development Communication graduate of UP Los Banos. She was the supervising administrative officer of the UP Manila IPPAO from 2005-2022 where she wrote many of its bulletins and publications; a former managing editor of the *Philippine Journal for Health Research and Development*; and assistant editor of the UP Manila *Healthscape*.

ABOUT THE EDITOR

Prof. Jose Y. Dalisay, Jr. is a multi-awarded Filipino writer of fiction, poetry, drama, and non-fiction. He has also worked extensively as a professional editor. Among his extensive oeuvre is the ten-volume *Kasaysayan: The Story of the Filipino People* (Manila: Asia Publishing/Reader's Digest Asia [1], 1998). He is currently a professor emeritus of English and Creative Writing at the College of Arts and Letters, UP Diliman.

PREFACE

"If it is not written, it did not happen" is an adage that prompted us to buckle down and chronicle with as much detail as possible the massive undertaking of UP Manila in tackling the Covid-19 pandemic. It was the greatest debacle our generation faced, akin to the Spanish flu that caused an estimated 25 million deaths worldwide. The depth and breadth of the university constituents' response to this crisis was unprecedented. It was a story of heroism, ingenuity, and true *bayanihan* spirit that had to be recorded for posterity.

It was not only the country that was affected; alas, the whole world was thrown into disarray and billions of people cowered in fear. UP Manila's Philippine General Hospital was put at the center of this maelstrom when the government designated it as one of the Covid-19 referral hospitals. At the same time, the rest of the UP Manila community—administrators, scientist-researchers, faculty, students, staff, even alumni—rendered valuable contributions, big and small, to contain this malady. The campus became a magnet for all forms of aid from businesses of any size, different organizations, government agencies, and ordinary citizens. Known and covert heroic deeds became common occurrences.

We endeavored to include as many specifics as we could gather into this book, to acknowledge all persons' acts of kindness, gallantry, and sacrifice. But because this is a retrospective account, we inevitably may have missed a number of these in reaching for our overarching goal of painting a dramatic picture of the significant and heartwarming events that transpired in UP Manila during the pandemic. For more details, UP Manila's *Healthscape* issues and the end-of-term reports of the colleges may be consulted.

Our acknowledgments go first to former Chancellor Carmencita "Menchit" Padilla, who provided sterling and inspiring leadership during this crisis to the whole Health Sciences Center. Second, PGH Director Gerardo "Gap" Legaspi and all members of his Covid-19 Crisis Team were the major players in orchestrating this great response. The Chancellor's Advisory Council members consisting of the vice chancellors, deans, directors, and administrators of the different offices and researcher-scientists of the NIH, College of Medicine, College of Public Health, and all over the campus completed the manpower pool for this massive movement. All staff members of the Information, Publications, and Public Affairs Office painstakingly documented what transpired during those challenging times. We also thank the photographers of the UP-PGH Human Spirit Book Project for allowing us to include some of their pictures in this book. Only a fraction of the innumerable men and women of UP Manila will be named in these pages, but gratitude is owed to all of them.

It is our hope that this book will stand as a testament to the fortitude, perseverance, and heroism of the UP Manila community in overcoming Covid-19, and serve as a beacon of service for future generations of UP faculty, staff, and students.

OQ MALANYAON, MD

Office of the Chancellor
UNIVERSITY OF THE PHILIPPINES MANILA
The Health Sciences Center

MESSAGE

Responding to and eventually conquering the Covid-19 pandemic entailed every bit of the expertise, creativity, grit, and resilience of the UP Manila community. Ours was a journey like no other and chronicling and sharing its highlights and milestones would make it more significant.

Thus was how our plan of writing a book about the university's pandemic experience was conceived. While many publications have been prepared on the science of Covid-19, what makes each experience special and meaningful is the deep sense of humanity that anchored and guided every step, measure, and strategy to overcome the fierce adversary.

This book, *When Heroes Rise: UP Manila Responds to Covid-19* delves into the heart of the UP Manila initiative. It seeks to capture the courage, fortitude, and ingenuity of the men and women behind each dimension and facet of the response and how they rose from the struggles and uncertainties.

During those years, UP Manila embodied remarkably its academic and community service functions, going beyond these mandates to meet the people's needs. Its cadre of competent, hardworking and committed academics, health workers, and researchers toiled and persevered to protect the people and serve the communities.

With partners and volunteers, they braved the odds and worked beyond schedules and beyond the call of duty. Fear was all around but love, hope, and the passion to serve were greater as the Covid-19 crisis expanded and these strengthened our goals, our systems, and our strategies as a health university.

The *bayanihan* spirit, a virtue embodied by the PGH Bayanihan Na! Operations Center at that time was unprecedented in every way and formed the core of the response. We may face another kind, another form of crisis but certainly, this centerpiece approach can be adopted again with other novel innovations for better guidance and preparation to respond and deliver.

Our hope is that this book will not only provide enriched wisdom and understanding in dealing with crises but also instill a strong commitment and action in every Filipino yearning to serve their fellowmen now and in the future.

Carmencita David Padilla MD, MAHPS
National Scientist
Chancellor, University of the Philippines Manila
November 2014 - October 2023

Office of the Chancellor
UNIVERSITY OF THE PHILIPPINES MANILA
The Health Sciences Center

MESSAGE

When Heroes Rise: UP Manila Responds to Covid-19 is a book that chronicles the journey of our country and the legacy of service and resilience of the University of the Philippines Manila in serving during the most precarious period that our nation and the world have faced. It documents the profound contributions of UP Manila as a beacon of hope and a voice of reason.

In the face of the Covid-19 pandemic, UP Manila took decisive actions to care for those who were in need. We took up the challenge of assembling a Covid-19 Crisis Management Team, becoming the Covid-19 referral center, and transforming and running a hospital into two— Covid-19 and non-Covid-19 units.

Likewise, the pages of this book honor the courage and sacrifices of all frontliners— healthcare workers who exposed themselves to the daily risks and life-threatening harm to their patients and environment. The passages vividly illustrate how teamwork and organizational agility maintained a culture of faith, encouragement, and optimism. Healthcare is a group effort, demanding contributions from the support staff, allied health professionals, volunteers, researchers, and administrators. Even those who worked behind the scenes were vital to the hospital's function. These joint efforts made a great difference between saving and losing lives.

Individuals, national and local governments, non-governmental organizations, and private agencies donated substantially—food, medical kits, personal protective equipment (PPEs), bicycles, misting tents, and financial support—to UP Manila. The PGH Bayanihan Na! Operations Center ignited volunteerism and allowed faculty, students, and staff to participate. These efforts made their way into the frontliners and the patients and uplifted their human spirit. They are significant reminders of the impact of kindness and humanity that each person and institution share with another in times of crisis. They alleviated the patients' and hospital staff's pains, suffering, loss, and grief; and produced personal and collective accounts of relief, joy, and survival–which deeply resonated in this book's narratives.

The pandemic carried several lessons and reflections. UP Manila is realizing a vision of improved and equipped healthcare for the future. In experiencing medical difficulties, it reaffirms our dedication to innovation, research, and accessibility as we maintain our commitment to excellence, honor, and service.

Finally, this book pays homage to all who were part of the stories. My sincerest gratitude to the individuals who contributed their energy, expertise, and time; and to the Filipino people who continue to inspire UP Manila to advance into a more responsive health science center.

Michael L. Tee, MD, MHPEd
Professor and Chancellor
University of the Philippines Manila
November 2023 - present

CHAPTER 1

The Nation Beckons, UP Manila Responds

Like a thief in the night, Covid-19 descended onto Philippine soil in late January 2020. A married Chinese couple flew in from Hong Kong to Cebu, from Cebu to Dumaguete, and then from Dumaguete to Manila. On January 21, the couple arrived in Manila. Four days later, the 39-year-old woman was brought to San Lazaro Hospital for coughing and a sore throat; on January 30, she tested positive for Covid-19—the first such case in the Philippines—but the report says, "Her symptoms resolved, and she was discharged." Her 44-year-old husband was not so fortunate. Suffering from fever, cough, and chills, he too was admitted to San Lazaro and was found positive for Covid-19 on January 31. But his condition worsened, and he died the next day, February 1. His was the first Covid-19-related death reported outside of China.

Three hundred and thirty-one passengers were on board the three flights that the couple took. Among them was another 60-year-old Chinese woman who flew on to Bohol from Cebu; and in Bohol, she went to a hospital complaining of fever and coryza. She recovered and was allowed to fly back to China via Cebu on January 31. Only after she left was it confirmed that a sample taken from her on January 23 had tested positive for Covid-19.

All three patients had originated from Wuhan, China, where Covid-19 had been first reported on December 8, 2019. By March 1, 633 cases had been reported in Metro Manila, a number that would rise exponentially in the months ahead. The beast was loose, and soon it would devour large swaths of victims all over the world.

A New and Frightening Menace

To Filipinos—and indeed everyone everywhere else—Covid-19 would usher in a new and frightening menace, an existential threat to humanity that would remind people of the fragility of life, of the vulnerability of societies and governments not only to external dangers but also to internal discord, and of the need for science to not only shoot for the stars but also to engage in the most mundane and most microscopic of inquiries, specifically into viruses and their transmission.

On February 11, 2020, the World Health Organization (WHO) gave a name to this new or "novel" coronavirus—so-called because viewed through an electron microscope, the spike proteins surrounding the virus particles appear like a crown—"Coronavirus Disease 2019" or Covid-19 for short, by which it would quickly be known. By then, more than a thousand deaths had been reported worldwide since its outbreak in the city of Wuhan in China's Hubei Province in December 2019.

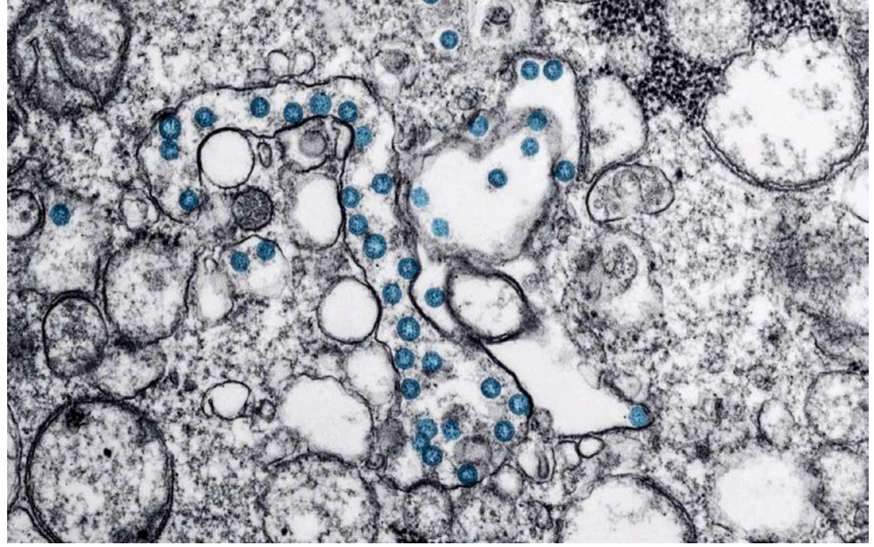
The Huanan Seafood Wholesale Market in Wuhan is believed to have been the source of the Severe Acute Respiratory Syndrome Coronavirus or SARS-CoV-2 virus, the cause of Covid-19.

There are several types of coronaviruses that are either generally harmless or cause common colds and mild to moderate pneumonia in humans; while some affect only animals, notably bats (prime carrier of the virus), camels, or civet cats.

Rarely, these animal strains "jump" to affect humans; and once this virus has gained entry into a human, transmission to other humans increases dramatically. This was seen in the outbreaks of SARS-CoV-1 in 2002 and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in 2012.

SARS-CoV-2 virus is transmitted when people expel and inhale very fine respiratory droplets and aerosol particles which are infectious. It takes 2-14 days for the virus to incubate before the patient becomes symptomatic. The common manifestations are fever, cough, sore throat, malaise, difficulty of breathing, fatigue, diarrhea, headache, and other complaints like loss of taste or smell. A host of other complaints have been reported like skin lesions; but mostly the initial picture is that of a viral pulmonary infection, the severity of which is affected by the patient's existing comorbidities.

Of interest are asymptomatic or very mildly symptomatic cases, especially among young and healthy persons, who can infect others. This, plus the fact that infected patients, while still incubating, can already transmit the virus, makes the control of this disease's transmission very challenging and justified universal mandatory masking, physical distancing, and lockdowns as initial control measures.



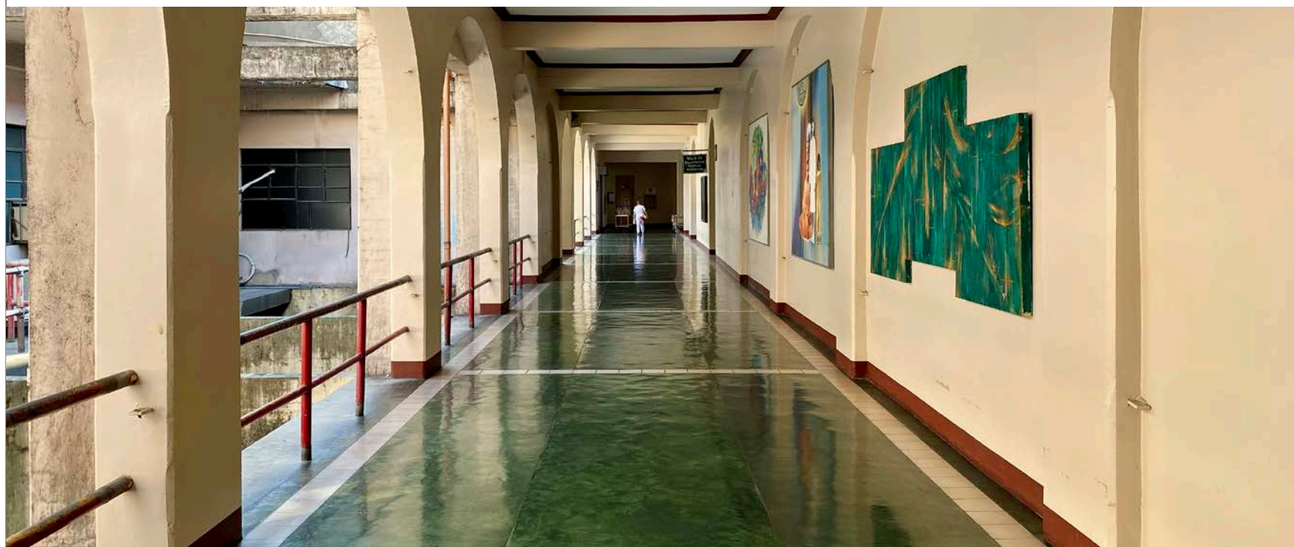
Transmission electron microscopic image of an isolate from the first US case of Covid-19; CDC/Hannah A Bullock, Azaibi Tamin (2020)

By March 11, 2020, after more than 118,000 cases with 4,291 deaths reported in 114 countries, the WHO declared Covid-19 a pandemic. Earlier in February, Italy became a Covid-19 hotspot which caused its government to issue stringent control measures, effectively locking down the country. Elsewhere in the world, countries started closing borders, shutting down schools and workplaces, cancelling gatherings and public events, and stocking up on medical supplies.

Prior to this pandemic, our government had already convened an Inter-Agency Task Force on Emerging Infectious Diseases (IATF-EID) headed by the Department of Health (DOH) to respond to such a crisis.

The whole planet at this time was shaken by Covid-19 and lives were upended drastically and dramatically. The WHO, leading disease centers, scientists, and researchers all over the world buckled down to work—to know everything about this contagion and search for its solution.

By March 16, 2020, the Philippine government placed Luzon under a community quarantine. And there began the arduous journey to defeat this malady.



A solitary healthcare worker walks along a deserted corridor on the second floor of PGH.

UP Manila Mobilizes

In the Philippines, the response to Covid-19 necessarily involved not only the government, particularly the DOH. Confronting and containing the disease required a broad and concerted array of actions designed to locate infections, limit transmission, provide medical care to the infected, and ultimately, provide economic and social assistance to communities and sectors affected by these measures especially during the recurrent periods of lockdowns. This whole-of-society approach would engage the government's executive departments, local government units (LGUs), the police and military, the medical sector, and civil society among others. Within the government, the groundwork for a coordinated response had already been laid out by the establishment in 2014, under President Benigno Aquino III, of the IATF-EID. This task force would become the principal framer and implementor of the National Action Plan to combat Covid-19.

But another key sector was also mobilizing swiftly to deal with the new enemy: academia, most capably represented by the University of the Philippines Manila (UPM). One of the University of the Philippines' eight constituent universities, UPM was uniquely positioned as UP's and indeed the country's Health Sciences Center, with its primary focus on health education, research, and public service.

UP Manila's Oblation stands in front of PGH, a symbol of the university's readiness to sacrifice for the nation.

UPM is composed of nine degree-granting units, namely: College of Allied Medical Professions, College of Arts and Sciences, College of Dentistry, College of Medicine, College of Nursing, College of Pharmacy, College of Public Health, National Teacher Training Center for the Health Professions, and School of Health Sciences.

Also part of UPM are non-degree granting units, the Philippine General Hospital (PGH) and the National Institutes of Health (NIH).

Established by the American colonial administration in 1910 to serve as "the most modern (hospital) in the tropics and one of the best of its kind in the world," PGH grew to become a national institution, the country's largest tertiary government hospital and also its largest training institution for doctors, nurses, and other medical professionals. Today, it has 1,100 charity and 400 private beds being looked after by 19 clinical departments composed of distinguished faculty and the best trainees; and supported by around 4,000 employees serving close to a million patients, almost all of them indigent, each year.

Façade of NIH is shown with its new building under construction behind. This towering building will house cutting-edge laboratories among its features.

The NIH, on the other hand, stands at the forefront of Philippine health research. It is one of the implementing agencies of the Philippine National Health Research System, an integrated national framework for health research in the country alongside the Department of Science and Technology (DOST), DOH, and the Commission on Higher Education (CHED). Among all these, it is the NIH that has the vision, the expertise, and the means to conduct cutting-edge research aligned with national needs and priorities. The NIH comprises 16 institutes and centers covering a broad range of specializations from epidemiology and human genetics to health policy and herbal medicine.

With this dedicated armory of academics, doctors, nurses, medical staff, and researchers, UPM braced for the most daunting challenge it would face since the PGH and UP's Manila campus were rocked by the bombs and artillery shells of the Second World War. Back then, the University and the PGH had struggled mightily to remain open and to serve the public at all costs. The war on Covid-19 would call them once again to arms, to heroism.

Before the pandemic struck, on a typical day in UP Manila, close to 5,000 students and their teachers could be found in the classrooms, laboratories, libraries, and cafeterias within the nine colleges. Scientists at the NIH would be doing research or experiments in their labs and offices. Within this campus was the PGH, employing thousands of personnel comprising doctors, nurses, paramedical staff, and administrative personnel.

In 2019, PGH saw almost 700,000 patients. All its hospital beds were always fully occupied, with hundreds of patients waiting in line to be admitted. On a daily basis, at least 200 patients were being rushed to the emergency department. From Mondays to Fridays, 2,500 consultations were being conducted daily in the outpatient clinics. These numbers did not include the thousands of patients per day going to the hospital for routine laboratory tests as well as highly specialized diagnostic procedures.

The busiest part of the hospital was the Emergency Department that received a constant flow of seriously ill patients coming mostly from the nearby districts and provinces and all the way from the remotest areas of the country; while at the Outpatient Department, a throng of patients started arriving in the wee hours of the morning hoping to be seen sometime during the day.

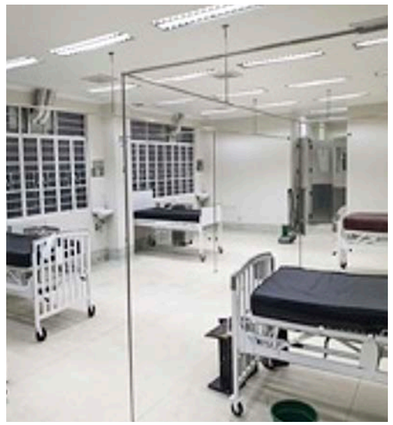
Also within this complex were 1,900 personnel reporting for work in the many offices of UP Manila, providing the necessary backend support for the smooth operation of all the colleges and the university.

Prioritizing Infection Control

Preparations began in earnest as soon as the first case of Covid-19 was confirmed in January. Dr. Regina Berba, an infectious disease specialist and the head of the Hospital Infectious Control Unit (HICU) of PGH, set up a few single rooms on the hospital's pay floor to be dedicated to Covid-19 patients. By February, the Spine Unit's ground floor was converted into a 13-bed isolation facility after retrofitting by the engineering team.

"It was really urgent. Everything was urgent from January 1 onwards even before the lockdown was declared. We had to stay on top of the situation," Dr. Berba recalls.

The PGH isolation facility, well prepared even before a pandemic was declared



Then, the HICU began training personnel on how to deal with Covid-19 patients based on what was known about highly communicable viral infections. When they started, Dr. Berba's team was composed of three nurses and a secretary, and they worked closely with the other infectious disease specialists.

Upper photo: Dr. Regina Berba leads the HICU staff in training personnel on handling Covid-19 patients. Lower photo: NIH Executive Director Dr. Eva Cutiongco-de la Paz appears on TV and announces some Covid strategies

At this time, NIH Executive Director Dr. Eva Maria Cutiongco-de la Paz began meetings with the PGH Director's Advisory Board to map out strategic plans to respond to Covid-19. Immediately, at the NIH, Dr. Raul Destura—together with a team of 15 scientists who developed a testing kit for dengue known as Biotek M Aqua in 2017—started developing the first RT-PCR local testing kit for Covid-19 as soon as the whole genome sequence of the virus became available. The testing kit was developed in collaboration with the Philippine Genome Center (PGC) and the Research and Biotechnology Division of Manila HealthTek, Inc., the latter a first-ever university spin-off company of UPM.

The GenAmplify Corona Virus Disease-2019 rRT-PCR (real-time reverse transcription polymerase chain reaction) Detection Kit was subsequently approved by the Food and Drug Administration (FDA) on April 3, 2020 after three weeks of field validation.

The critical infection control issues that had to be addressed when the pandemic started were on the early detection of cases, prompt isolation of infected and suspected infected persons, management of supply shortages, retraining of frontliners, and infrastructure improvements.

Setting Up the UP-PGH Covid-19 Crisis Team

On March 19, 2020, PGH Director Dr. Gerardo "Gap" Legaspi received an official letter from the DOH requesting PGH to be a Covid-19 referral hospital for one cluster in the National Capital Region. This letter declared PGH as a Covid-19 Referral Center, aside from the Lung Center of the Philippines and the Jose M. Rodriguez Memorial Hospital.

Preparations for the conversion of PGH's infrastructure and setting up of strategies began with a tight one-week deadline. A Covid-19 Crisis Team or Crisis Management Committee was formed to organize operations.

PGH Director Gerardo Legaspi informs the hospital constituents and the public of the hospital's acceptance of its designation by DOH as a Covid-19 referral hospital and meets with DOH Sec. Francisco Duque.

The team worked with the PGH administration team of Dr. Maria Teresa Julieta Urbiztondo-Benedicto, deputy director for Administration; Dr. Maria Margarita Lat-Luna, deputy director for fiscal services; Dr. Racel Ireneo Luis Querol, coordinator for equipment; and Dr. Homer Co, coordinator for health services.

The Covid-19 Crisis Team had to plan quickly for the expected surge of Covid-19 cases. Director Legaspi thought it best to have mostly surgeons compose this team. Surgeons were chosen because they were not doing surgeries as all the operating rooms were closed. The Crisis Management Committee had five main teams with specific roles, namely:

Clinical Team. Dr. Berba led the clinical team, from where all clinical decisions emanated. They prepared the formal documents on the science, experience, and rationale behind the recommended actions and policies.

Crisis Men. Dr. Orlando Ocampo led a team of "Crisis Men." Directly reporting to him were the implementers on two sides—the Manpower Committee and Logistics Team.

Manpower Committee. Dr. Rodney Dofitas led this team that was concerned with the healthcare workers and their needs. In Dr. Ocampo's words, everything that moved *(lahat ng gumagalaw)* fell under Dr. Dofitas' jurisdiction. According to Dr. Dofitas, this was approximately 5,000 people from top to bottom. Dr. Marc Paul Lopez worked with him.

Logistics Team. Dr. Dennis Serrano, logistics coordinator, oversaw the acquisition and appropriation of hospital needs; and the acceptance, monitoring, and distribution of donations. In Dr. Ocampo's words, Dr. Serrano was responsible for everything that did not move *(lahat ng hindi gumagalaw)*. Dr. Anthony Perez coordinated with him.

Information, Education, and Communications (IEC). Dr. Apolinario Ericson Berberabe, IEC coordinator, led the information campaign. Formed for information dissemination and for sharing advisories, reminders, and appeals; they worked closely with the clinical team. They toiled non-stop from understanding the documents from HICU and other teams that needed to be disseminated in UP-PGH, transforming these into infographics that an average layperson could understand, and finally to disseminating these as informational materials.

Additional members were designated, namely: Dr. Catherine Co (transportation), Dr. Mac Onglao (safety officer), Dr. Mico Perez (ER coordinator), Dr. Kenny Seng (pay coordinator), and Dr. Ronnie Baticulon (supply and standards).

> *"The Director's office was the brain center of the operations. It was where everyone converged—those who needed supplies, those who had manpower problems, those who were exasperated with the lack of both, and those who were just very tired."*
>
> **- Dr. Dennis Serrano**

The emptied PGH atrium starting to hold some donations

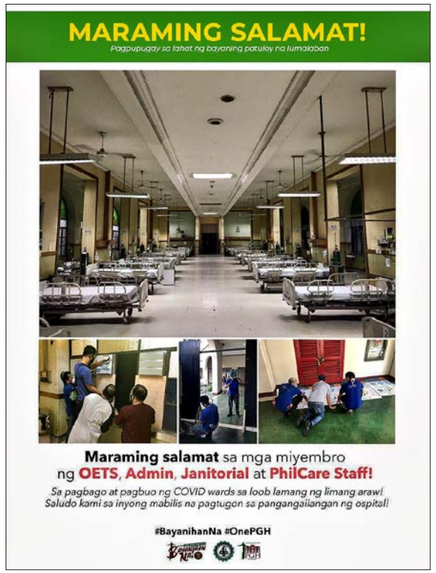
Operational concerns were immediately addressed to transform PGH into a Covid-19 referral center. After the terms were cleared with DOH and the strategy of having a Command Center with its Crisis Team implemented, a dashboard at the Transfer Command Center allowed the mapping of all Covid-19 admissions, providing information on bed availability at a glance. This facilitated the movement of patients entering and leaving the hospital. The office was located directly above Dr. Legaspi's office in a room on the second floor.

PGH Director Gerardo Legaspi holds initial planning and strategizing meetings with heads of the Crisis Team.

Declaring itself as the first Covid-19 referral center in its cluster was an unpopular decision for PGH at first. Many people disagreed with the decision when it was announced. Dr. Legaspi got a lot of backlash even from people very close to him. There were those who believed that the PGH could not do the job. Furthermore, it would come at the cost of regular services to the PGH clients who could not go to any other hospital in the country.

However, Dr. Legaspi believed that without a policy in place, the hospital's services would eventually be overwhelmed with Covid-19 cases. By becoming a referral center, PGH stood at an advantage because following the DOH's directive, the hospital would accept only Covid-19-documented patients, mainly severe and critical cases. This would spare PGH especially the Emergency Room (ER) and wards from being flooded with mild cases and people with symptoms but who had not yet tested positive for Covid-19 (PUIs).

> *From a nation-building angle, I think there was no other hospital that should lead it but the biggest hospital in the country, the PGH. To handle the misgivings before we finally opened, I wrote that letter because maybe people just had to realize that it was really something we had to do.*
>
> **- Dr. Gerardo Legaspi**

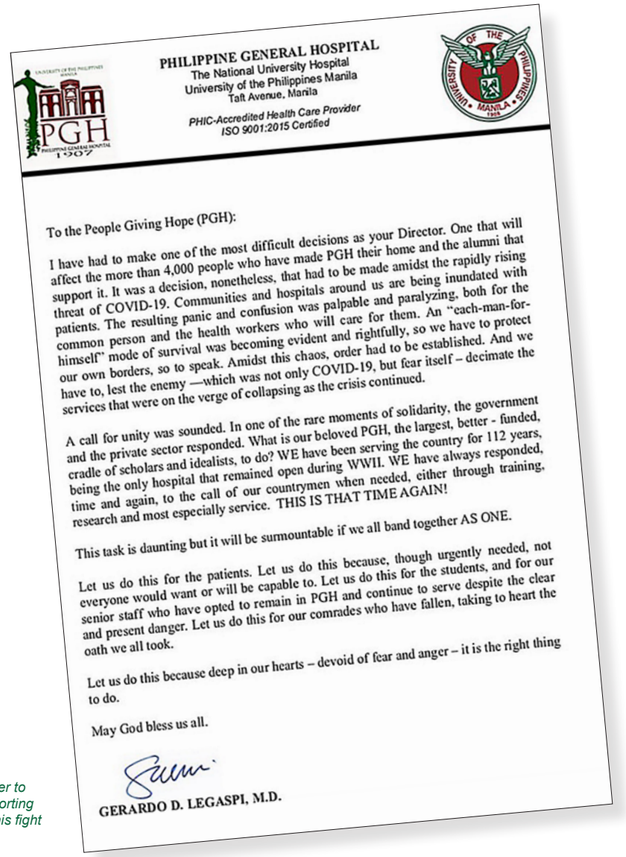


Earnest preparations begin throughout the campus

In retrospect, even the skeptics now agree, it was the right decision that was made as it enabled UP-PGH to assume its responsibility as the nation's foremost public hospital. Supported by the other health-oriented and research units of UP Manila and the UP System, it was the natural and indeed the only logical choice to lead in the war on Covid-19 on the public front.

The PGH Covid-19 Crisis Team is affectionately remembered today as "The Best Team Ever." Mostly composed of surgeons, the team had great dynamics; its members were used to working under pressure, and everyone worked over and above the call of duty for the good of all. Because of their work, people would tell Dr. Legaspi that the unpopular decision he made back then was "one of the best decisions we've made as administrators of this hospital because it really opened the resources of PGH to handle the Covid-19 crisis."

Also on the team were "many other brave souls who stood in harm's way while the entire country went into lockdown," recounts Dr. Serrano. The heads of various PGH departments sent their share of staff to the Covid-19 Crisis Team and they were:



PHILIPPINE GENERAL HOSPITAL
The National University Hospital
University of the Philippines Manila
Taft Avenue, Manila
PHIC-Accredited Health Care Provider
ISO 9001:2015 Certified

To the People Giving Hope (PGH):

I have had to make one of the most difficult decisions as your Director. One that will affect the more than 4,000 people who have made PGH their home and the alumni that support it. It was a decision, nonetheless, that had to be made amidst the rapidly rising threat of COVID-19. Communities and hospitals around us are being inundated with patients. The resulting panic and confusion was palpable and paralyzing, both for the common person and the health workers who will care for them. An "each-man-for-himself" mode of survival was becoming evident and rightfully, so we have to protect our own borders, so to speak. Amidst this chaos, order had to be established. And we have to, lest the enemy —which was not only COVID-19, but fear itself – decimate the services that were on the verge of collapsing as the crisis continued.

A call for unity was sounded. In one of the rare moments of solidarity, the government and the private sector responded. What is our beloved PGH, the largest, better - funded, cradle of scholars and idealists, to do? WE have been serving the country for 112 years, being the only hospital that remained open during WWII. WE have always responded, time and again, to the call of our countrymen when needed, either through training, research and most especially service. THIS IS THAT TIME AGAIN!

This task is daunting but it will be surmountable if we all band together AS ONE.

Let us do this for the patients. Let us do this because, though urgently needed, not everyone would want or will be capable to. Let us do this for the students, and for our senior staff who have opted to remain in PGH and continue to serve despite the clear and present danger. Let us do this for our comrades who have fallen, taking to heart the oath we all took.

Let us do this because deep in our hearts – devoid of fear and anger – it is the right thing to do.

May God bless us all.

GERARDO D. LEGASPI, M.D.

Director Legaspi's letter to PGH constituents exhorting everyone to unite in this fight against Covid-19

The Crisis Team plans and maps out the different aspects of the Covid response.

Dr. Jonas Del Rosario, spokesperson; Dr. Jubert Benedicto, ICU Management Team; Dr. Dionne Sutter, Pay Patient Services; Dr. Adet Daez, Charity Patient Services; Dr. April Llaneta, Emergency Department; Dr. Esther Saguil, OPD; Ms. Cecille Peña and Glo Almariego, Nursing Service; Dr. Albert Alday, pulmonology; Dr. Jing Pagkatipunan, pediatrics; Dr. Jayjay Germar, obstetrics; Dr. Nenette Cupino, radiology; Dr. Mitch Diwa, laboratory; Dr. Grace Herbosa, anesthesia; Dr. Shiel Samonte, Employees Clinic; and Dr. Mabelle Leonarda, Transfer Command.

Director Legaspi recalls how the management showed strength in dealing with the staff, operations, and other concerns. Standing in the midst of uncertainty did not equate with acting uncertainly because of the circumstances. Leaning on science and learning from experience were how they were able to move forward despite the specter of fear rising before them.

"The way to handle the crisis was really to have a lot of resources available at my discretion or at the discretion of the Covid-19 Crisis Committee. For instance, the operating room at the OPD which was going to be the Covid-19 operating room was out of order. We had to fix it with private money. If we waited for PGH money, it would have taken six to eight months," says Dr. Legaspi.

A charity ward is transformed into a Covid-19 ward taking into account the prescribed airflow, distance, and infastructure configurations.

The transformation all around was tough; but communication was the key to resolve uncertainty in an inclusive manner. As with other matters, there had to be absolute trust in allowing people to do their best. Dr. Legaspi remembers that the team had a feeling of calm whenever Dr. Berba put out safety protocols. He didn't attempt to give directives regarding the personal protective equipment (PPE), ward flow, nor isolation protocols. Dr. Berba gained such a high respect that her words were like "laws" for the Covid-19 Crisis Team. They did not make any moves unless Dr. Berba approved them or Dr. Lim from the Infection Unit or Dr. Añonuevo from the Department of Medicine.

"Only one was talking—i.e. the infectious disease expert. Directives and protocols were all based on science and supported by evidence. The pronouncements were very significant because of this," adds Dr. Legaspi.

As head of the Covid-19 Task Force, Dr. Ocampo recalls that his days then always began early; half were spent on making plans and the other half on monitoring the execution of these plans. "I typically started my day around 7:30 in the morning and head straight to see Dr. Gap. I would then report on the happenings the past few days and update him on the current situation."

After discussing the news and how it would impact their operations and having considered the current situation and recent developments, they would both agree on the plan for the day. Dr. Ocampo would then reach out to key point persons to inform them of the strategy. He would proceed to the Transfer Command Center and review the Covid-19 monitoring dashboard which provided him with valuable insights.

Dr. Ocampo regularly visited the Covid-19 areas: Charity and Pay Covid-19 wards, the Intensive Care Units (ICUs), ER, and including the swabbing hub to check for long lines and other concerns. After that, if there were any fresh developments, he returned to Dr. Legaspi to recalibrate their plan for the day. If there were no updates, he spent most of his time in what they called "the war room."

He would find most of the crisis team members, particularly the surgeons, already present in that war room. They discussed Covid-19 issues and other matters, including the status of their colleagues—who had been affected and their conditions. Some members connected with other institutions reported on new developments or strategies that could be adopted in PGH. After a long day, they kept each other updated through their Viber group.

Predictably, the first few days were tough. Dr. Charles Michael Tejerera, a nephrologist in training, recalls that "We kind of had a lead-up to it because before they made the changes to the set-up here to receive patients, they were already pulling out the students from the rotations about a week or two earlier. So we were already feeling a bit of a strain. I remember it was March 15 or March 16 when it started. It was confusing and a bit scary because we didn't really know what we were getting into, how contagious it was or if we had gotten it, how deadly it would be, if you had caught it. So there was the fear, the uncertainty, just going day by day through it not knowing if we'd be pulled out to work somewhere else."

The Crisis Team with residents and nurses plan how to convert Ward 4 into a Covid-19 ward.

> *Only one was talking—i.e. the infectious disease expert. Directives and protocols were all based on science and supported by evidence. The pronouncements were very significant because of this.*
>
> **- Dr. Gerard Legaspi**

Nurse Son Michael Moreno was among the emergency nurses who received and sorted out the first cases of possible Covid-19 that came into PGH. “At that time, the processing of cases was very slow, and it took us 24 hours to confirm whether a patient was positive for Covid-19 or not. Even the wearing of full protective gear was yet to follow. Usually, they were just mild cases that came in, and the protocol then was just to send them home, to be followed by self-quarantine. Sometime around the third week of March, the severe cases started coming in—doctors who had attended medical conventions abroad. They were in critical condition, and we had to intubate them.”

Dr. Regina Berba briefs healthcare workers on infection prevention and control.

Gracing the launch of the UP-PGH Bayanihan Na! Operations Center on March 30, 2020 were the healthcare professionals and students who pledged to serve as “call center” volunteers for the BNOC.

The confusion needed to be managed. Says Dr. Diana Lachica: “The good thing about PGH was that the administration was able to mobilize quickly and identify the people who would make the protocols. This was to guard against the tendency for people in a hospital with so many departments to do their own thing. So the Crisis Team streamlined and put out the necessary information and the protocols, and despite the initial confusion, things became more structured and organized.”

Dr. Lachica was not assigned to the Covid-19 ward, but her concerns as a physician didn’t diminish, particularly with regards non-Covid-19 patients who now found themselves sidelined by PGH’s designation as a Covid-19 referral center. “We had many patients who didn’t know what to do or where to go, and at first we gave them a list of numbers to call, but this proved unmanageable. For one-and-a-half weeks, we became like call center agents, until we teamed up with PLDT, which provided a hotline, with one number that was easy to remember.” This became the Bayanihan Na! Operations Center (BNOC) wherein its Patient Query Arm will be headed by Dr. Lachica.

CHAPTER 2

A Journey of Service to Covid-19 Patients

Being part of a university system, UP Manila could count on a larger network of support for its needs and initiatives, particularly from the office of UP President Danilo Concepcion. Coming squarely in the middle of his six-year term, Covid-19 posed an unexpected challenge to Concepcion's administration, as it did to universities around the world. Classrooms, libraries, and laboratories had to be shut down; teachers and students had to shift to online platforms; and students and staff all had to be protected from the virus—or if infected, given medical attention. But as the national university in charge of PGH and NIH, it had an additional responsibility to the Filipino people—to minister directly to their medical needs while finding strategic solutions to deal with and defeat the virus.

After consulting with UPM Chancellor Carmencita Padilla and PGH Director Legaspi, President Concepcion issued Administrative Order No. PDLC 20-12 dated March 27, 2020, for the "Creation and Implementation of the UP PGH COVID-19 Bayanihan Na! Operations Center," directing the Office of the Chancellor of UP Manila to set up, organize, and implement the BNOC.

On March 30, the BNOC was formally launched with its command center at the Nurses Home within the PGH compound. Chancellor Padilla organized a small team and devised a system for consultations and donations. President Concepcion tapped his corporate connections, especially PLDT that donated 20 lines plus 20 more on standby with hotline 155-200, initially for 6 months (but continued much longer) at no cost.

From left: PGH Director Gerardo Legaspi, UP College of Medicine Dean Charlotte Chiong, UP Pres. Danilo Concepcion, Chancellor Carmencita Padilla, Vice Chancellor for Research Dr. Armand Crisostomo (in blue) with the volunteer doctors during the formal launch of BNOC

> *The BNOC was established to respond to an urgent need, and it succeeded because of the layers of people who were committed to work for its success.*
>
> **- Chancellor Carmencita Padilla**

Equipped with a Donations Arm and a Patient Query Arm, the hotline service with connectivity and a call center IT platform partnership was a joint effort between PGH IT team, PLDT's Enterprise Business Group, and the UP-PGH Medical Foundation, Inc. (PGHMFI) that facilitated donations.

The BNOC dedicated hotline was meant to have two main objectives and corresponding branches: 1) formalize a system to facilitate the University's reception of support for its frontline workers, and 2) enable it to respond to patient queries about Covid-19 and non-Covid-19 medical concerns. It replaced the Out Patient Department (OPD) and other PGH local numbers, effectively creating a unified and harmonized response from PGH. All calls were ticketed and recorded.

The Patient Query Arm was headed by Dr. Lachica. Patients were efficiently referred either for hospitalization or just Covid-19 testing. This system also decongested the ER and OPD from unnecessary consults. Patients (and sometimes healthcare workers) greatly appreciated that they can ask about their symptoms or other medical concerns such as scheduling, continuing maintenance medications, and other non-serious complaints over the phone or remotely through the hotline. They were provided reassurance, their fears allayed; and Covid-19 prevention advice for patients and their families was emphasized. Lastly, this hotline provided healthcare workers (HCWs) who have been sidelined in the Covid-19 battle (because of their age, comorbidity, other medical issues, or being placed in quarantine), an opportunity to be in the frontlines as well.

BNOC Committee: (from left to right) Dr. Anthony Perez (head, Donations Arm), Dr. Leilani Nicodemus (head, Volunteer Engagement), Dr. Diana Lachica (head, Patient Query Arm), Chancellor Carmencita Padilla, Dr. Scarlett Mia S. Tabuñar (overall head starting May 1, 2020), Prof. Joanna V. Toralba (asst. head, Volunteer Engagement), Dr. Anthony GH Cordero (head, External Linkages). Not in the picture: Vice Chancellors Michael Tee and Armando Crisostomo (vice chairs) and Dr. Melfred Hernandez (asst. head, Donations Arm)

The BNOC volunteers at work in their designated stations responding to Covid patient and donation inquiries.

The call for volunteers was extended to UP Manila, other UP constituent universities, and to UP alumni. Chancellor Padilla highlights the BNOC as the unexpected and dynamic venue that brought together people who had never met or worked before as a group and who were bound by a deep and genuine commitment to serve. The volunteers who were non-medical faculty found it difficult at first but the BNOC gave them a day-to-day opportunity to help and contribute no matter how small.

"Throughout this pandemic, we realized how brave the UP members were and how committed they were to serve," says Dr. Padilla "Even retired personnel had the courage to volunteer. Those times were indeed extraordinary as young and old had to deal with crisis management when there was no guidebook on dealing with this pandemic; but then we coped!" The faculty and students adapted to the situation. Phone scripts were prepared and onsite agents taking calls were instructed to follow the algorithm of responses. In the BNOC Volunteer Consent Form, volunteers declared that they had no contact with PGH patients. In case volunteers became infected with Covid-19 from any source, the BNOC and UPM agreed to help, stating in the waiver that it would "provide for the optimal support and care of their condition that were feasible within the current scenario until my full recovery." This commitment was consistent with their strategy of "form before function" that ensured the safety of healthcare workers.

Volunteers also agreed to "hold free and harmless the Center and the University of the Philippines from all liability," and despite this, many still bravely stepped forward to volunteer including the medical interns of PGH (who had been relieved from hospital duties when the lockdown started).

Since there was no employer-employee relationship created by their volunteer work, volunteers served without compensation or any kind of benefit; although meals were provided while on duty and every effort was made to provide transient lodging for those on the night shift. Rather, their service was considered an act of charity in response to a national crisis.

In about 18 months of operations by the latter half of 2021, the BNOC hotline received a total of 25,536 calls. Most calls were for non-Covid-19 consultations and requests for scheduling appointments to PGH; the rest were for Covid-19 consults, questions on kits/tests, hiring of healthcare workers, pledges and inquiries on donations, quarantine details, information on Covid-19 vaccines, Covid-19 survivor blood donation, and other miscellaneous inquiries. Over a thousand callers were instructed on how to secure admissions to PGH and other hospitals; hundreds were told to stay home and/or seek community/home isolation.

True to its meaning, the BNOC was at the heart of providing support to PGH services, mainly through the call for volunteers across all UP campus units, in ensuring the continuous provision of healthcare services to the people, and in coordinating efforts during the national health emergency.

"The BNOC put order into the system. With this pandemic journey, it was reassuring to witness our students' and our faculty's selflessness, generosity, and willingness to volunteer and serve; even performing tasks that were outside of their comfort zones. It emphasized that there is a need to come up with more opportunities for people to be able to volunteer their time and effort and to help," says Dr. Padilla.

Protecting Patients and Workers: Infection Control

Very early on, HICU started training people and devising protocols. An initial plan was to utilize the open space in the parking lot near the PGH oblation where patients may be interviewed, complete with guide for translation to Chinese (just in case more Chinese nationals reach our shores).

PGH was able to limit its incoming Covid-19 clients to moderate and severe cases through delegation. Milder cases were directed to other hospitals and recently set up isolation centers that PGH assisted in putting up. Quarantine facilities were set up in the city and these were connected to the PGH testing center. PGH also had to assist in improving the capability of other centers, institutions, and LGUs to handle mild cases. Furthermore, the PGH provided human resource support, supplies, and testing support to Covid-19 hospitals in the LGUs. According to Dr. Berba, they did not have time to do formal surveys of all the other centers and institutions; but because HICU was in numerous viber groups, they received countless calls from all over the country.

(Upper photo)Training personnel on infection control and adhering to protocols were key aspects of the Covid-19 response.
(Lower photo) A person suspected of having Covid-19 undergoes swabbing for RT PCR testing.

HICU was the lead on the science side of managing Covid-19. It gave out the policies, standard operating procedures, protocols, infection control and prevention measures, medical management plans, and surveillance strategies. They based their directives on the careful analysis of the scientific bulletins from the U.S. Centers for Disease Control and Prevention (CDC), WHO, and the Philippine Society for Microbiology and Infectious Diseases, Inc. (PSMID); researches from all over the world and from UP Manila; and data from PGH patients.

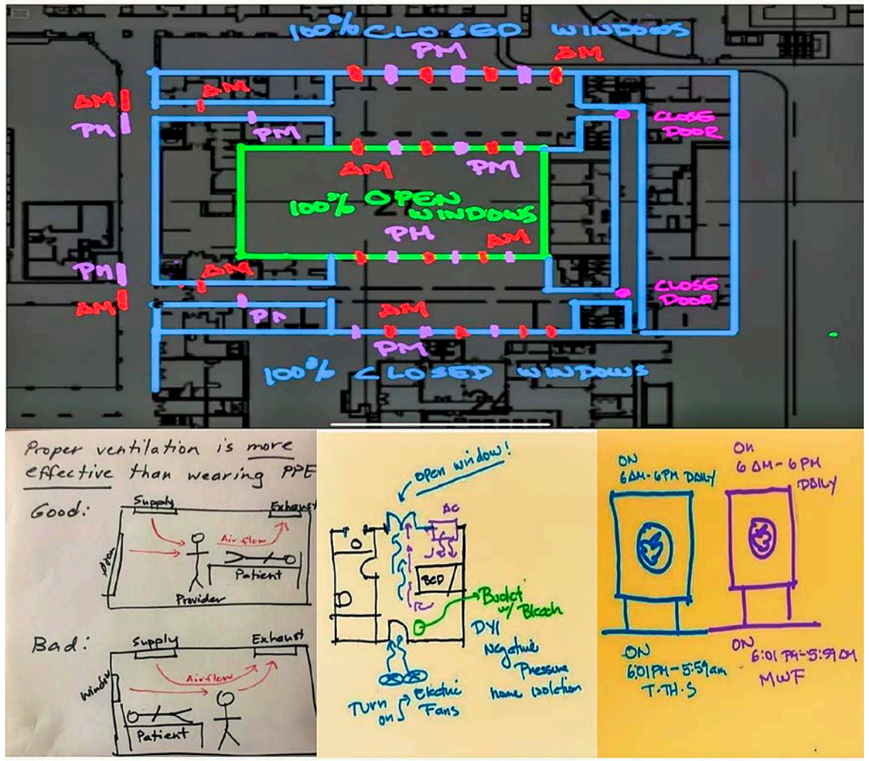
Dr. Berba relates that she and her team were comfortable going in and out of the Covid-19 wards, spending time conversing with patients and staff; and receiving feedback and gathering a lot of medical and administrative insights during these conversations. HICU's observations as well as the staff's and patients' suggestions and comments were evaluated, and some of these were incorporated in the final protocols and recommendations.

Because of the shift in operational processes, the system for patient consultations turned to digital technology. Visitor access was limited to virtual presence. Paper-based records were transformed into electronic and paperless alternatives. The Computerized Audited Records Retrieval and Online Tracking (CARROT) transitioned the extensive paper-based charts into electronic charts. The digitalization process of radiographic images which started prior to the pandemic was also completed during this time. All of these mitigated the spread of infection.

The digitalization hub of UP-PGH, where digital technology is utilized for various aspects of hospital operations.

Reconfiguring Infrastructure

The PGH building needed to be ready for the anticipated influx of Covid-19 patients. The WHO recommended negative-pressure rooms for a unidirectional flow of air exchange. PGH applied this principle in retrofitting the concerned sections of the hospital. Ensuring safe air exchanges meant having greater than 12 Air Changes per Hour. Infrastructure was reconfigured such that the airflow was managed to keep infected air out and draw fresh air in.



Sketches of the Covid-19 Crisis Team as they brain-storm on airflow inside the Covid-19 wards

The wind direction inside the wards were channeled one-way to make sure that it came in from outside on one side, circulated inside the ward, and then went outside on the other side. Air-purifying units (HEPA filters) were also distributed across work areas. Compared to making negative-pressure rooms, the unidirectional air flow was more achievable by using giant, large fans to push air and exhaust fans to direct the flow of used air. Fans had tissue strips attached for checking the air direction.

According to Director Legaspi, they did not have time to construct negative-pressure rooms within the one-week window. At that time, it was not yet determined for sure how to prevent the spread of the Covid-19 virus. Published research reports would later prove that increased air exchange was an effective way to prevent the spread of the virus.

> *All we needed to do was to ensure that air was blowing out of the ward, brought in from one side, and out on the other side. We had big blowers in front for this.*
>
> **- Dr. Gerardo Legaspi**

The key points considered in reconfiguring infrastructure were the directed air flow, engineering maintenance, readiness of operating rooms, laboratory facilities for Covid-19 testing, internal communication simplified for understandability with infographics, patient reassignment, and postmortem care. As far as the hierarchy of controls on infrastructure changes went, PGH prioritized engineering controls (i.e., isolated people from the Covid-19 hazard) and administrative controls (i.e., changed the way people worked).

PGH sought the best consultants from contractors to engineers and architects. Top architects of the country, Ar. Emmanuel "Manny" Miñana and also Ar. Daniel "Danny" Lichauco were with the Covid-19 Crisis Team. The DMCI combined prefabrication (e.g., stairs, walls, exhaust frames) and onsite building methods in the Covid-19 wards.

Getting the fans was tough. With all hardware stores closed, they could not buy the fans that were needed, but Dr. Serrano found a way. In the beginning, there were 130 beds and 6 redesigned wards. Initially designated for confirmed Covid-19 patients, these 130 beds (at least 3 feet apart) were placed in formerly 60-bed wards that became 22-bed wards.

The PGH Hospital Infection Control Unit performs fit testing of N95 and KN95 respirators among health personnel working in Covid-19 areas to ensure maximum protection.

The UP-PGH area of 10 hectares had 28 standalone and interconnecting buildings. The areas with the most activity were the Covid-19 ICUs, ER, Spine Unit, and Wards 1, 2, 3, and 4. These areas were closed off to the public.

Ensuring integrity and protocol compliance in PPE donning and doffing

To complement the reengineered air flow, Covid-19 and non-Covid-19 zoning was implemented with one-way traffic for donning and doffing areas where residents from the Department of Dermatology and other PGH departments were stationed. "Donning" and "doffing" are medical terms where donning is "to wear" and doffing is "to remove" the PPE.

Safety officers after training were assigned usually three to a room to make sure that donning and doffing were performed correctly as prescribed. Dr. Berba ensured that safety officers were present because the staff sometimes made mistakes in doing these processes especially during the early part of the pandemic. Additionally, the safety officers checked the integrity of the PPEs. These PPEs were essential as they saved lives by protecting the wearer from getting infected. With safety officers present, there was an assurance that the PPE was worn correctly and someone was on the lookout for defects in the material. Damaged PPEs were replaced to protect the healthcare personnel. Medical staff usually stayed long hours in the Covid-19 wards and spoke to the Covid-19 patients, so the danger of infection was ever-present.

Since the officers were dermatologists, they also took care of the healthcare workers' skin, particularly when personnel started having skin irritations from wearing face masks for long periods of time. This practice of having safety officers was among the popular practices of UP-PGH that was emulated by other hospitals.

Healthcare workers going on duty in the Covid-19 Zones wore PPEs for level 4 protection over their clothes. Since PPEs were expensive then and had to be thrown away after use, some employees voluntarily wore adult diapers and often ate only after their eight-hour shift.

Hospital areas were classified into zones to define areas where the air was possibly contaminated. Appropriate levels of protection were observed in each zone. PGH zones were color-coded into Red/Hot, Orange, and Green zones. Red/Hot zone and Orange zone areas used level 4 and level 3 PPEs depending on the number of hours of stay. Green zones used level 1 and level 2 PPEs. All other areas not mentioned were non-Covid-19 areas.

Red/Hot Zones were the Covid-19 wards and the ICUs where the Covid-19 and PUI patients were located. Orange zones were still within the Covid-19 ward airspaces, but with reduced contamination. Green zones had natural airspaces within the same wards. These airspaces were presumed clean.

A dialysis unit was also established inside the restricted Covid-19 areas for several patients who developed kidney complications and needed hemodialysis.

For overall safety, specific areas where one could walk were defined. There was clarity in zoning. People knew exactly where they could enter and where they were not allowed. Floors had temporary markers so one knew where to stand. Elevators maintained a one meter distance away between people such that taking the elevator took a long time.

The layout of the Covid-19 wards also needed to be changed to allow for more space between beds. Recalls Nurse Thirsteen P. Edisto: "The setup had to be changed radically. The beds used to be very close to each other, and it was very crowded; but because we had to take precautions, we had to bring down the number of beds in a room from a high of 42 to about half that. But as more patients came in, we had to reconfigure the layout again to accommodate more of them."

Level 4 Covid-19 PPE

Satisfying Human Resource Needs

During this pandemic, the needs of the staff were given special consideration. Coming together to "protect the healthcare worker," UPM put a premium on making them feel safe and letting them know they were protected, and on making sure that workers were comfortable. Besides the provision of PPEs and safety-related equipment; barricades, infographics, proper directional signs, notices, and warning signs were also produced to ensure safety.

> *"The greatest asset of this operation was the human resource, the "tao." We learned early on that we have to protect these "tao" and provide them with everything that they need."*
>
> **- Dr. Orlando Ocampo**

The key points for the care of human resources revolved around seven concerns: physical care and protection; training and education; telemonitoring by the UP Health Service; psychological support; staff housing and transportation support; addressing work hazards; and personnel support.

Personnel support meant ensuring complete duty coverage in Covid-19 designated areas. To facilitate the "form before function" principle, they made sure that health worker safety in the workplace was in order. This reassuring practice of letting people feel that they were safe continued long after the fear of Covid-19 had significantly decreased by 2022.

Safeguarding and promoting the health of workers through donated vitamin supplements

Task Sharing as Part of Operational Strategy

When the Delta variant of Covid-19 threatened everyone because of the greater chance of dying from it, PGH called for "task sharing." As a concept, "task sharing" is a way for people to share what they know. In essence, there was redistribution of tasks among health teams and staff from the highly trained personnel to those with less or no training. For example, a Covid-19 specialist doctor will teach a non-Covid-19 doctor—"You teach me, so I can share the task with you." There was a buddy system that accomplished tasks by pairs. The surgeons who did not know how to do the Covid-19 rounds would now go to the ICU while also doing the Covid-19 ward rounds. Since they were all doctors, they were able to follow through with proper instructions. Task sharing was also done with PGH nurses. That was how PGH survived.

Task sharing and buddy system helped greatly in implementing plans and serving Covid patients better.

PGH, being a highly specialized hospital, actually bred highly specialized people. That's why one of the strategies in terms of manpower utilization was task sharing, especially among the residents. Imagine a pathologist manning the Covid-19 ward or the ICU, or the ER! A lot of retraining had to done. The nurses also had to undergo this retraining, not only because they're really in front of the frontliners, but also to reassure and motivate them to do their work.

Technically, training was not a problem at all because of the multitudinous experts within PGH. It had all the experts from Covid-19 operations, to vaccination, to treatment. And when online meetings became the norm, education and information dissemination even became much easier. The only problem encountered was breaking down barriers of some specialty units, for them to open and share their physical spaces.

DOH also adopted task sharing as a principle in their hospitals.

Fulfilling All Equipment and Supply Requirements

The supply chain was virtually non-existent due to the lockdown limitations under the Enhanced Community Quarantine. Instead, provisions were acquired in two ways—through the Bayanihan to Heal as One Act (R.A. 11469) under a negotiated procurement and through personal contacts or donations. The urgency of the Covid-19 situation was likened to a war for survival, with administrators going into battle after battle to fight for much-needed provisions.

Acquiring and maintaining the supply at hand involved three key points: rearranging allotment via savings reprogramming and cutting budget on the Maintenance and Other Operating Expenses down to 90% and put 10% aside for Covid-19; stockpiling of drugs, consumable supplies, and durable medical equipment; and a better-focused inventory system to handle the storage for provisions.

Some supplies were purchased using PGH's budget. Despite, and perhaps because of the emergency, the hospital never went over its budget, according to Director Legaspi. This was because the PGH had the support of the DOH and Department of Budget and Management (DBM). The hospital had its budget reprogrammed for the pandemic and received fresh funds from the DBM.

Other provisions were obtained from donations. Substantial amounts came from private sources. With everyone's support, PGH was able to prepare well and procure enough supplies. It was very fortunate to have the PGHMFI as its partner. Donations for UP Manila and other purposes also went through the Covid-19 Crisis Committee's processes. To safeguard against waste and inefficiency, Director Legaspi said, "Everything passed through me."

Increasing equipment and supply needs were met through donations that were kept at the Alvior Hall. Overflow donations were kept in the nearby Paz Mendoza classrooms.

Easing supply shortage of PPEs and overalls through partnership with local suppliers

Dr. Serrano narrates the ups and downs in getting equipment and supplies:

"When it all started, we had to deal with each day as it came. There were no guidebooks, manuals, nor protocols. Whatever problems came, we had to craft a solution. For logistics, I was essentially in charge of getting whatever it was that the hospital needed to mount a pandemic response. That meant of course getting PPEs, ventilators, high flow nasal cannula machines, and video laryngoscopes among others. There were also a multitude of smaller items that were just as important—large plastic trash bins for the contaminated PPEs, large wind-blowers and giant fans to create the necessary negative pressure for the Covid-19 wards, new air-conditioning units for all the ICUs (because it was suffocatingly hot inside the PPE); air purifiers, and even water dispensers for all the units. We set up tents for the number of dead we were expecting; tents for supplies; tents for swabbing and finally container vans for healthcare workers' accommodations.

"'PGH' was a great checkpoint "passcode". We would email our suppliers or delivery personnel stamped with the PGH logo and they would always get through to us. It was likewise the keyword for our price negotiations and pleas for discounts and bargains and it always worked. After all, one never knows if he or she will require a connection to PGH at some point, especially during this time of pandemic.

"Once out of crisis mode, we started thinking out of the box and looked for ways to ease the supplies shortage—re-sterilizing N95s with UV or hydrogen peroxide, supplying everyone with 3M face masks with filters to replace N95s, tying up with local suppliers who could manufacture coveralls, and buying PAPRs—Powered Air Purifying Respirators for our anesthesiologist and those who were in the ICUs. The Director's "war fund," instead of being depleted, actually became bigger because of the generosity of donors!

Food donations were abounding, keeping HCWs and staff well fed throughout the pandemic.

"We became more comfortable with the task. There was less fear. There was still urgency in what we needed to do, but people sort of accepted that this came with the territory. We had to act fast but also we had to act aboveboard to protect our director from charges later on.

"The task was formidable. But I think we always had Divine assistance and a lot of Divine intervention in what we were doing. When a problem seemed insurmountable one day, the next day would present us with a solution or an opportunity to create an answer. We would get calls from other hospitals and we never turned them down; as other hospitals came also to our rescue many times. We knew we were all on the same boat. Our days were filled with meetings with DOH, IATF, other hospitals, private corporations, and NGOs for coordination and collaboration.

"One of the things that kept me going was the gestures of gratitude that I would get from the frontliners once they got their PPEs, their own half-face masks, their unit's air purifiers. Small items but the joy they brought was always more than enough for all the difficulties of procurement."

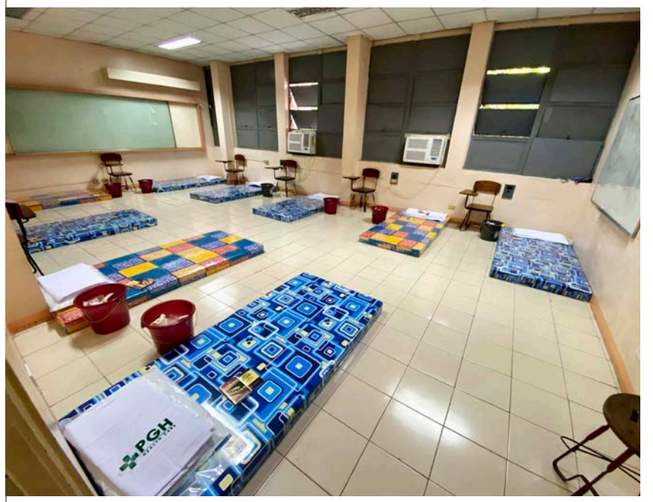
Providing Shelter, Accommodation, Transportation

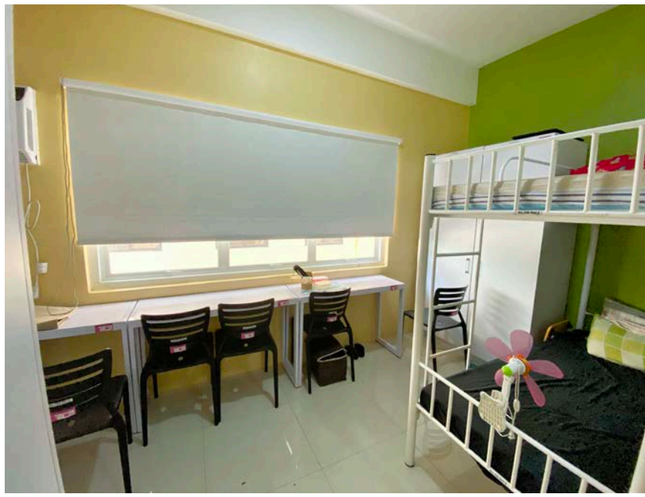
According to Dr. Dofitas, head of the Manpower Committee, taking care of manpower was like taking care of one's own home. "We wanted to keep our home clean and orderly, safe from the coronavirus." The same analogy applied to the PGH frontliners and the people within the vicinity.

With the growing fear of bringing the Covid-19 virus home from work and with new restrictions on mobility due to the lockdowns, the problem of finding accommodations for HCWs became more pronounced. There was an acute shortage of places where the HCWs could stay. Temporary shelters were then sought especially for those who did not want to go back to their families for fear of bringing the virus home.

At the start of the pandemic, more than 2,000 HCWs and personnel reported to NIH and PGH. From March 12-30, healthcare workers who were unable to return home regularly were accommodated in hotels around the campus because the hotel owners offered their rooms for free to PGH HCWs!

In addition to the regular hospital staff, an online call for volunteers was made to augment the manpower pool. Dr Dofitas reports that so many volunteered—young and old UP graduates, medical interns, and students. However, students and interns were not allowed by the government to serve as frontliners but were assigned at the BNOC instead. Looking back, Dr Dofitas was happy to note that because so many doctors from all the different hospital departments like psychiatrists, pathologists, obstetricians, surgeons, orthopedic surgeons, and many others volunteered, the manpower needs were met adequately.





Temporary shelters for workers and volunteers included nearby hotels who volunteered their rooms, UP Manila dorms and college building spaces, and those of adjacent colleges

He was relieved that for about six months, the hotel rooms were offered free for the hospital staff; but after that, search for adequate housing ensued. Because there were no classes then, the college classrooms and facilities were transformed into temporary housing. Donations were aplenty consisting of cots, mattresses, folding beds, curtains, toiletries, and other sundry items that made these academic areas suitable as living quarters.

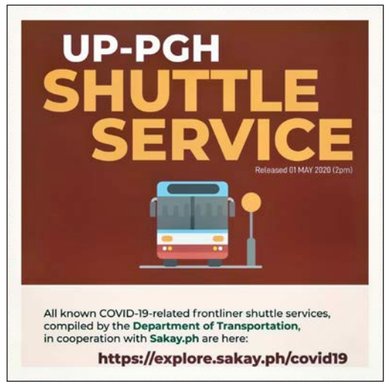
> *When kindness is present as orders and instructions are explained, then they will follow them properly and do them with kindness as well.*
>
> **- Dr. Rodney Dofitas**

Vice Chancellor for Planning and Development Dr. Michael Tee directed the necessary renovations on the areas in the colleges that were going to be used for temporary lodging. As a result, colleges had some of their rooms turned temporarily into housing facilities with all the requisite safety precautions and contingency plans in place.

UP Manila's Central Administration offices were temporarily transferred to the Student Dormitory. One hundred twenty-four beds were allocated for PGH administrative staff and NIH personnel in the dormitory rooms. The rooms had a cozy feeling to them, thanks to Showcase Carpet Center for donating roll-up window blinds.

The College of Dentistry's Auditorium became the sleeping quarters of the security guards. Afterwards, all college deans in close coordination with VC Tee, Dr. Dofitas' group, and UPM alumni, were able to convert parts of their colleges into lodging facilities.

The PGH Housing team that Dr. Valparaiso led, together with UPM alumni, the Pi Sigma Delta, The Outstanding Young Men of the Philippines Foundation, the PGH Chaplaincy, and the Tzu Chi Foundation, provided healthcare workers with other supplies (linens, pillows, hygiene kits, towels, laundry services, water, food, etc.) in their temporary homes. Donors had warm showers installed in coordination with Dr. Hermogenes Monroy III. The disinfectant and cleaning materials gathered from the BNOC donation arm were made available to healthcare workers through Dr. Perez. The security guards and Philcare janitorial workers slept on mattresses donated by the Rotary Club of Makati through Dr. Hazel Zuellig.



Creativity in finding transport for the workers and volunteers yielded BEEP modern jeepneys that reached as far as Bataan and Cavite; buses volunteered by some companies; and donated bicycles.

This in- and out-of-campus lodging, termed *Panatag na Kanlungan* (meaning Peaceful Shelter), as of May 12, 2020 involved a total of 15 hotels, 10 colleges, and the Student Dormitory. As for non-PGH staff's shelter needs, the PGH Chaplain's office took on that responsibility, according to Fr. Marlito Ocon, SJ.

Because of the lockdowns, a shuttle service had to be prepared for frontliners who wanted to go home regularly. The PGH established BEEP modern jeepney services initially for 5 routes which was later increased to 8, reaching up to Sta. Maria, Bulacan and Dasmarinas and Paliparan, Cavite. Bus lines were also added that were provided by the Department of Transportation, while the local government of Cavite provided bus line along Aguinaldo Highway. Rotary Club of Makati also facilitated the donation from Francisco Motors. There were other entities that augmented the transportation requirements of the PGH constituents: Department of Environment and Natural Resources, GMA News and Public Affairs, Durabuilt Motors Inc, Toyota Motors Philippines Corporation, and individual sponsors.

There was also the PGH Bike Program which lent 156 bicycles initially (and reached up to 500) to PGH workers and 9 electric kick scooters for use around the UP Manila campus.

Employees line up to borrow bicycles under the UP Manila Bike Share project.

Information, Education, and Communication

Dr. Berberabe, chief of Gastrointestinal and Hepatobiliary Surgery, served as the coordinator for communications of the Covid-19 Crisis Team. While the IEC team was not included in the original plan, it later turned out to be, in Dr. Berberabe's words, "that important." The afterthought back then needed to be the forethought, with everything being new and data science valuable.

> *Equip the people with knowledge and you will allay their fears.*
>
> **- Dr. Erickson Berberabe**

At a time when fake news, misinformation, and disinformation were rampant, information from PGH was considered credible by all segments of society. Laymen, specialists, and even other hospitals waited for statements and guidelines from the PGH. Later, PGH rose to prominence for its participation in the country's Covid-19 response mainly because of its IEC materials. After taking it upon himself to do this task proactively, Dr. Berberabe led his team to focus on infographics and infographics alone as their content.

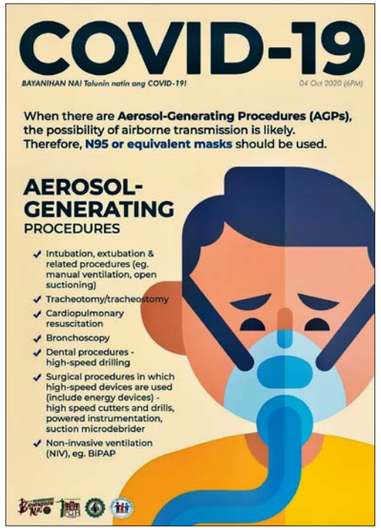
The IEC team had 11 members: nine from the Department of Dermatology (residents who also worked as safety officers and their Chair Dr. Liesl Cubillan), Dr. Jose Jonas Del Rosario (who later became the PGH spokesperson), and Dr. Berberabe himself. Dr. Berberabe, a cancer surgeon, also had some experience as an editor, having worked with UP Manila's Information, Publication, and Public Affairs Office (IPPAO).

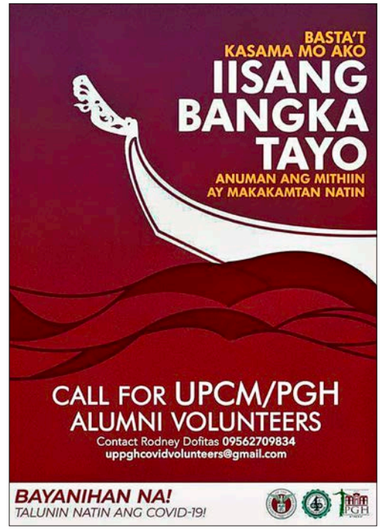
Their viber group had a total of 16 participants, and when some residents graduated, others replaced them. The dermatology residents were noted to excel in infographics, so Dr. Cubillan volunteered these ladies. This team did not have funding nor an office. Initially, Dr. Legaspi just wanted his messages translated to Tagalog; but later on Dr. Berberabe directed his team to make the messages for PGH into simple, easy to understand, attractive, and attention-grabbing infographics.

Communicating science to non-scientific audiences required a very different approach since the ordinary person had to be able to understand this. The key points had to be simplified. Preparing the material took time and effort, as infographics were not just a matter of graphic design and layout like in usual cases. The layout and designs had to be thought of carefully.

The infographic's words were also done in two sets of languages—English and Filipino, so the work doubled. Sometimes, they did regional languages as well; but most of the time, they were just in the two main languages. The infographics did not use any face or known influencer because it had to reflect PGH rather than a person. The back-and-forth process between the materials and discussion sometimes took a lot of time.

Dr. Berberabe attended all the meetings of the Infectious Disease Group and administration people and with pen and paper on hand, started scribbling and laying out his ideas to send to the team. The most common source of information was Dr. Berba's team (HICU), which came out with updated directives, protocols, and advice. In most instances, within 30 minutes, infographics were ready for dissemination. Before long, it was not just the PGH community that was anticipating these infographics but a wider community of health professionals, other hospitals, and later on through social media, to the whole country!



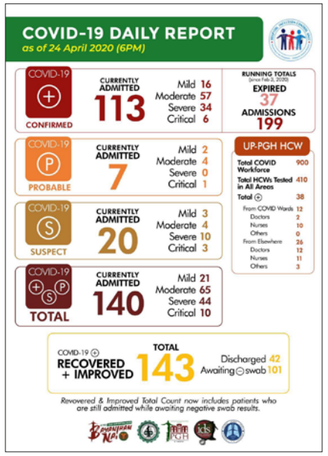


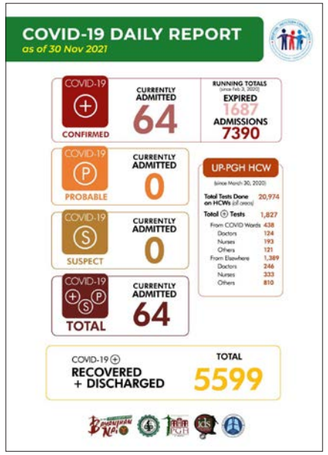
They were doctors, yet they suddenly found themselves turning into a news agency of sorts engaged in a full-scale IEC campaign. They conveyed their messages specifically for the UP-PGH staff as their audience but with a universal context. The messages communicated ranged from public health advisories up to many other things for the PGH community including donations, directions, and even "Do's and Don'ts" at home. The universal context made it applicable to other hospitals and places, so much so that they were readily adopted. Their infographics spread by word of mouth and through social media and was very effective. Even DOH took notice of these materials.

Doing IEC for free and without a budget was a remarkable feat. Dr. Berberabe recalls that they worked into the wee hours of the night for the materials to be released daily and as necessary. The running joke back then was that the statistics in the infographics were like "lotto" numbers that people anticipated every day. These "daily stats," as they were called, would be released by 9 pm or earlier in the evening. Everyone was waiting, people couldn't sleep until they saw these numbers.

The anticipation and attention of all participants during the meetings of the Crisis Management Committee (which according to Dr. Berba and Dr. Ocampo took a while, about two hours or so because all of PGH Department Chairs and Heads would be there with their reports and updates), was admirable in an environment where everyone was stressed, fatigued, and often mentally drained because of the pressures of fighting the virus. People were most pleased and happy with the IEC materials because while they were still wondering about some queries, the infographics were already prepared and gave important answers.

The IEC team was able to generate around 700 infographics from 2020 up to 2022 when the Omicron variant was up and about; and after this, the need for infographics gradually waned after the arrival of the vaccines.





Healthscape, Webinars, and TVUP

It was of utmost importance for the UP Manila constituents to be informed of the tectonic shifts in pertinent aspects of running not only the hospital but the academic part of the university and all its support offices. IPPAO had been publishing quarterly hard copies of *Healthscape*, the official newsletter of the campus; and on April 18, 2020, the first *Healthscape Special Covid-19* issue came out online. The Chancellor's message apprised everyone of the massive changes and exhorted the community to be courageous and united like one family in this epic struggle. Also on the front page was the announcement of the launching of the BNOC.

Since then, special *Healthscape* issues came out almost weekly until August, and roughly every two to three weeks until December 2020. By 2021, issues came out monthly. It contained all the news and latest information on Covid-19 as well as all activities and goings-on around the campus. (The concerned *Healthscape* issues can be accessed through this link: www.upm.edu.ph)

On another front, Drs. Susan Pineda-Mercado and Teodoro Herbosa thought of holding webinars to bring up-to-date information on Covid-19 and approached Chancellor Padilla about this. UP Manila, specifically the NIH's National Telehealth Center, PGH, and College of Medicine, collaborated in coming out with a Friday noontime webinar, the *Stop Covid-19 Deaths Webinar Series* (SCDW), also in partnership with UP System's TVUP. This became a much-anticipated program since its first webisode debuted on April 24, 2020 not only by medical professionals but by the public; reaching a viewership of around 4,000 per episode, even some from other countries. Attendees could comment and ask questions by posting these in the chat box during the webinar.

It supported the promotion of the highest possible standards of care for Covid-19 patients and sought to counter misinformation and disinformation about the pandemic that were rampant during those days. Engaging and diverse webisodes covering a wide range of topics relevant to the Philippines were presented by the best health experts not only from the campus but also from other centers here and abroad. Even clinical departments not very much involved in the care of Covid-19 patients participated. The interesting and highly informative webinars came out weekly because of the strong collaboration of all the teams of clinicians and scientists involved.

UP Pres. Danilo Concepcion (middle), UP Manila Chancellor Carmencita Padilla and UP Vice Pres. for Public Affairs Elena Pernia receive the Gold Quill Award of Merit for the *Stop Covid-19 Deaths Webinars*.

Hosted by Dr. Susan Pineda-Mercado (adjunct faculty of UP Manila) and Dr. Raymond Francis Sarmiento (director of National Telehealth Center), with the content synthesis at the end given by Chancellor Padilla, this program clearly actualized the responsibility of UPM to share information with the community.

And for this, the US-based International Association of Business Communicators awarded the prestigious 2022 Gold Quill Award of Merit under the Communication Management Division in the "Covid-19 Response and Recovery Management and Communication" category to the SCDW during a ceremony in New York.

Still using the online platform, the UP internet TV network's TVUP program on health hosted by Chancellor Padilla segued to handle Covid-19 topics. Invited experts discussed the latest knowledge and important guidelines especially protection of oneself, the home, and community against the virus. (The full list of topics tackled by the SCDWs can be found in the TVUP website.)

These initiatives made UP realize that various platforms can be used for education. The printed word that could be accessed online, interaction with experts during webinars, and informative programs on YouTube immensely helped not only professionals but even laypeople to be well-informed, updated, and reassured about Covid-19.

The foregoing IEC strategies also attested to how communication is key during crises such as the Covid-19 pandemic to allay fears, confusion, and instability and combat falsehood and misinformation that were prevalent and dangerous during those times.

Buffering the Mental and Emotional Toll

The Covid-19 crisis amplified mental health problems when emotions like extreme stress from the isolation intensified. Fears that peaked, sadness that overwhelmed, grief that paralyzed, anxiety that choked, depression that loomed, and loneliness that devoured were just some of the painful yet commonplace feelings that Filipinos experienced at all levels of society. The battle was very much against these new threats to the well-being of both individuals and communities.

What worsened the situation was the creeping paranoia that surges in infections provoked, encouraged by ignorance and panic. People suspected of having Covid-19 were ostracized by their neighbors, and some were forced to flee.

In a profound irony, the PGH HCWs found themselves being stigmatized and discriminated against as well, because of their daily proximity to the disease. They were sacrificing their own safety to save lives, but some felt isolated and abandoned. The communities they inhabited evicted some of them from their rental homes. Sometimes, just seeing the medical staff in uniform was enough to generate fear. "When we ordered food at this store, the guard shooed us away when he learned that we worked in a Covid-19 unit," recalls Thirsteen. "I was very upset and I complained to the city government, which made amends. But the damage was done. It felt very degrading to work so hard, to line up for food when you got hungry, only to be turned away."

And sometimes too, the staff opted to stay away from their families to reduce the risk of transmitting the virus to them. "I decided on my own to live elsewhere," says Nurse Son. "We had a very small place and there were only three of us—myself and my parents who were both seniors, so I chose to move out to protect them." It was a reasonable fear, because Son witnessed a fellow nurse fall ill and die, leading him to ask himself, "Am I doing the right thing being here? I could be next."

Free grooming services for HCWs

PGH was no exception to this trauma of Covid-19. Dr. Dofitas reported that many PGH employees resigned when PGH was designated a Covid-19 referral center. Quite a number of HCWs resigned especially those who were going to be assigned in a Covid-19 area. Their reason was their family—spouse, children, elderly relatives—and they could not or were not allowed to leave the house for everyone's safety. It was a grim situation when the staff quit, sometimes against their own wishes, but they could not be blamed.

The fear and the loneliness were palpable in the wards, striking both patients and staff alike. Nursing Attendant Marlyn Mallari recalls that "Our first male patients all seemed to have suffered a stroke, which made it a bit harder for us because we had to keep changing their diapers. They had no one else to watch over them and had no communication with their families, so it was left for us to serve them. No one could visit them because everyone had to wear a PPE or hazmat suit, and these were expensive."

Alfonso Alejandro, a utility worker, says that they were divided into three groups. “We came in at the start of April, a week after the entry of the first group of patients. The setup was very different. It used to be easy to move around the wards, but with the hazmat on, we could hardly breathe.” It was, of course, far worse for the patients. “Their situation was pitiful,” says Alfonso. “They had no one with them, not even when they died. They would be put into body bags, which could not be opened. Then they would be cremated the next day, without being seen by their families.”

Heartbreaking dramas took place in the waiting area outside Ward 3. Thirsteen Edisto recalls “There were family members who offered to bring their own hazmats just so they could come in and see their loved ones or say goodbye to them, but of course we couldn’t let them in as it was prohibited. It was only later that we were able to connect them by video, to ease the pain of separation.”

The hospital staff served regular eight-hour shifts before the pandemic. In the worst of times, that stretched out to as long as 30 hours for doctors like Dr. Charles Tejerera, when there were about 200 patients to care for in the Covid-19 wards. Nurses worked for as long as 16 hours. “It was really difficult moving around in our full Level 4 hazmat suits, let alone perform operations,” says Charles. “Eventually, we worked out a system that didn’t require full protection in less dangerous areas; but in the beginning, we were in full hazmat gear, and it was hard to adjust.” Just putting the hazmats on involved a complicated choreography that everyone soon mastered: face mask, shoe cover, barney suit, double gloves, then goggles.

“Your sweat fogged up inside your goggles, and the goggles hurt,” says Thirsteen. Son adds that “Because the PPEs were for one-time use only, and they were expensive—quadrupling in price to as much as P4,000 each during peak in demand—we had to manage. We couldn’t go to the bathroom, so we wore diapers. We took to fasting. We wore our PPEs for eight hours, and threw them away, to be replaced the next day.”

The PPEs—made of plastic so they were unbearably hot—mostly came from donations; all resources were pooled so supplies were sent to whoever needed them most.

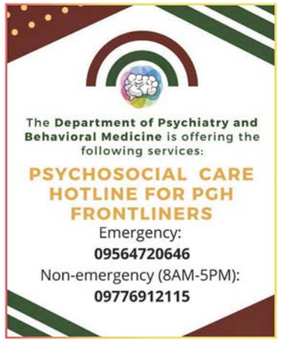
Thankfully, despite these hardships, most people stayed and became PGH’s heroes. Since stigma and discrimination were rampant outside the PGH community, it made sense to stay inside the campus. Contrary to what outsiders may think, PGH itself was a safe place because of the value it placed on safety and human lives backed by evidence-based science. It enjoyed widespread support from the government and the public, and morale was high because of a shared commitment to the hospital’s and the University’s mission. True, they were at the heart of the pandemic; but when asked, the Covid-19 Crisis Team did not know of anyone who died whose death was caused by working in PGH.

To aid the staff in their hospital duties, PGH adopted a tri-fold approach to alleviate the extreme stress in the environment: psychosocial care, dermatology care, and spiritual care. Surviving this pandemic wasn’t all about ventilators and medication. Surviving also meant taking care of one’s mind and body and also connecting with others, and PGH did all these. They continued to meet and work together to face the enemy.

Behind the PPEs are tired, weary bodies and pained and bothered souls that are constantly under threat by the pandemic; but sacrificing their lives and health to serve patients.

HCWs write their names on their hazmats to be recognized by patients.

Psychosocial Care and Covid-19 Advice



It became crucial to mitigate mental health concerns. For frontliners, it was not only about coping as it was for the general populace; but also about braving the odds together. The PGH's Department of Psychiatry and Behavioral Medicine offered professional counselling and allied services for PGH frontliners.

In 2021, PGH's volunteer doctors launched the PGH Covid-19 TeleGabay, with the taglines, *Hangad naming mapagaan ang Covid-19 na dinaramdam mo* (We wish to lighten the Covid-19 burden that ails you) and *Handa kaming tumulong sa inyo* (We are ready to help you) in their infographics.

The PGH Covid-19 TeleGabay helped patients who had questions related to the Covid-19 disease through free information that would help them recover. Volunteer doctors answered questions or gave guidance from 8-12 pm and 2-6 pm (as of June 3, 2021), adjusted to 9 am to 5 pm (as of June 13, 2022). It was also readily accessed through Facebook.

Skin care, a welcome add-on. When HCWs began to wear the prescribed attire to stay protected, their skin would get irritated with prolonged use. PGH dermatologists working as Safety Officers, helped them take care of their skin onsite. In addition, the dermatologists made infographics with tips on how to solve PPE-related dermatitis via proper skincare.

The UP PGH Chapel and Jesuit House are situated inside the PGH compound.

Spiritual care to soothe the soul. Focusing on spirituality gave people stability and meaning in life. When Covid-19 struck, the specter of disease and death loomed everywhere. When nothing seemed to work for patients and their caregivers, the longing for something supernatural to intervene seemed better than grasping at straws. Since they were already thrown into the fire, there was a belief that perhaps the sacred could empower them. Desperate times called for desperate prayers. At PGH, despair was alleviated with the aid of the Catholic chaplaincy stationed within the PGH complex.

While hospitals nationwide hired priests for their chapels, PGH had a unique setup. The Jesuit priests who manned the chaplaincy were volunteers, not hired, as was the norm elsewhere. In addition, PGH had the chaplaincy beside it right from the very start of its long history of saving lives. According to Fr. Ocon, SJ, their predecessor Jesuit volunteers were present at PGH as early as 1907 while the building was being constructed. When the hospital started its services in 1910, they were already at the Jesuit house.

The chaplaincy provided spiritual support to the hospital and its patients through the decades. In the Roman Catholic practice, this meant extending the sacraments to the sick and dying, to those looking for forgiveness, and to those needing confession. They stayed within the PGH complex and were on call for emergencies, including emergency baptisms for newborns who would soon die.

During the lockdown, "non-essential" work stopped, including church activities since public gatherings were not allowed. But this did not stop the church from fulfilling its mission. Fr. Ocon sought permission from Dr. Berba to visit patients, believing that spiritual intervention could help. Despite her initial hesitation because the priests were volunteers rather than staff, and because their advanced age rendered them more susceptible to infection, Dr. Berba relented and allowed them in, even into the high-risk Level 4 PPE zones. It was a controversial decision but was eventually proven correct, as the spiritual comfort provided by this special ministry—"driven by love" in Fr. Ocon's words—was invaluable to many, both among staff and patients.

Telechaplaincy (an offsite communication mode via phone, mobile, or online methods) was one of the free services that arose from the expanded range of spiritual support that they offered. This was undertaken in addition to the hospital visits.

Turning Open Spaces into Areas of Refuge

"We need areas of refuge in the hospital," Dr. Legaspi said when he realized that the overworked and anxiety-filled hospital staff needed some visual and emotional relief from their heavy burdens.

He then proceeded to improve the hospital's gardens and open spaces; and added donated artworks to adorn the PGH walls. "We need to draw their eyes away from the wards," Dr. Legaspi noted. The atrium and the garden behind it near the elevator were refurbished. The effect was to make the hospital ambiance livelier; with visual reminders of what everyone was fighting for—the privilege to breathe, enjoy beauty, and be happy and at peace with oneself and with the world.

Enriched areas and spaces of refuge such as the PGH Atrium (left) and the garden beside the Dept. of Pediatrics (right)

CHAPTER 3

Running Two Hospitals

When the pandemic began, PGH temporarily halted many of its regular services to give precedence to Covid-19 disease management. This closure had a negative impact on patients suffering from other illnesses unrelated to Covid-19. However, with PGH as the nation's leading and largest public hospital, this situation could not be sustained for long. Non-Covid-19 patients had as much right to medical attention as others, and the sudden and extreme adjustments to the hospital necessitated by the pandemic had to take them into account as well.

The hospital administration had to make hard but definitive decisions about how, where, and when to move people, equipment, and other resources to serve both Covid-19 and non-Covid-19 patients safely and efficiently—in effect, running two hospitals in the same compound at the same time. More or less, the Covid-19 wards were on the right side of the compound, while the non-Covid-19 areas were on the left side. There were separate dedicated operating rooms for non-Covid-19 patients.

The PGH's suspension of regular services was eventually lifted when Covid-19 cases decreased. However, "regular" did not immediately mean a return to completely the same ways prior to the pandemic. The resumption of these hospital services was a gradual process that adjusted to how the virus and its outbreak developed, given that it mutated into different varieties with varying impacts.

> *I think the most important thing we did at the start was we ran hospitals. We separated the operations of Covid-19 from regular operations.*
>
> **- Dr. Gerardo Legaspi**

Then PGH Deputy Director Dr. Juliet O. Sio-Aguilar led the department chairs in their different capacities. Meanwhile, the Covid-19 Crisis Team was a totally separate entity. There was no overlapping of roles, but they communicated closely with each other. This setup allowed PGH to be at the forefront in the battle against the coronavirus disease while continuing to provide tertiary medical and surgical care to the afflicted, especially the underprivileged.

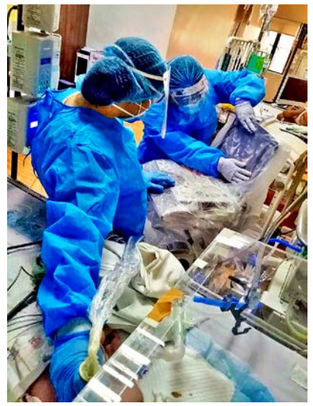
The medical and surgical teams carefully planned for the resumption of these services, starting with informing the general public about existing preventive measures and ensuring that employees and staff had mastery of the Covid-19 response procedures.

The four basic response points employed at an individual level on the ground included washing of hands, wearing of PPEs, social distancing, and regular surveillance of HCWs. The success of this campaign required networking between non-Covid-19 hospitals and the implementation of the UP Online Consultation Request and Appointment (UP OCRA) System and telemedicine. These systems prevented crowding and long queues in the hospital; and teleconsultation especially became a means to diagnose and treat patients without them having to struggle with difficulties in transportation amidst the lockdowns.

Implementation of the UP OCRA

After further strengthening and solving problems related to online consultations at the OPD of the hospital and in almost all colleges, departments, sections, and specialty clinics of UP Manila; non-Covid-19 patients who need actual physical examination, invasive diagnostic tests, interventions for treatment, and admission to hospital were scheduled and attended to by personnel wearing different levels of PPEs depending on the care the patient needs.

In performing diagnostic tests like an ultrasound, the trainees wore N95 masks, a face shield, gown, and gloves before approaching the patient. Additionally, the ultrasound machine was also covered and underwent special disinfection after each patient.



Wearing Levels 3 or 4 PPE entailed grit, endurance, patience, and sacrifice for doctors and other healthcare workers. HCWs are seen here while performing diagnostic ultrasound, upper left picture (even the ultrasound machine is well covered); cardiac catheterization procedures, upper right and lower left pictures; and surgeries, lower right picture.

Inside the operating rooms and where more invasive procedures were done, doctors and other supporting staff wore level 4 or full hazmat PPEs.

Running two hospitals, providing care for the Covid-19 confirmed and non-Covid-19 patients, besides being expensive because the PPEs amounted to a large amount of money, entailed great sacrifice on the part of the personnel because wearing PPEs ranged from uncomfortable to excruciating; but such was the dedication of the UP Manila family!

Patients complying with Covid-19 safety guidelines seek consult at the Outpatient Department.

The Kaagapay, Kanlungan, Kalinga, and Kandili

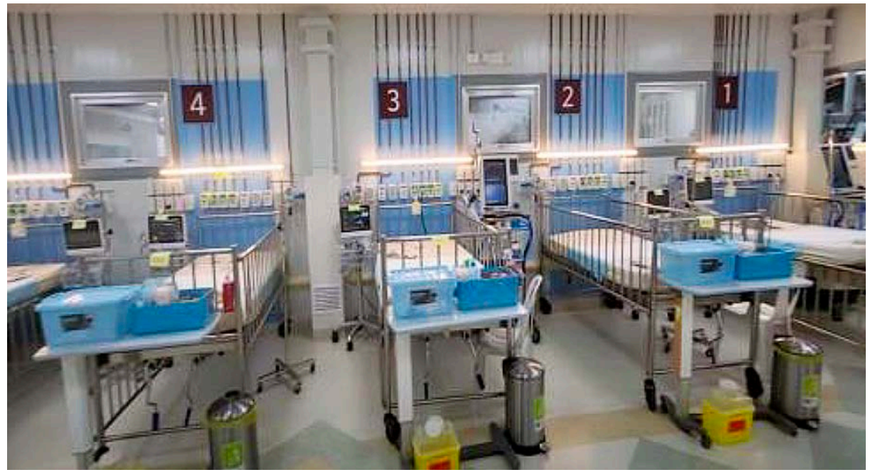
Another key response of UP-PGH to this crisis which also allowed the hospital to continue looking after non-Covid-19 patients was the establishment of the Bayanihan Na! Isolation Unit. This facility was designed to be the safest place with the cleanest air in the campus. To achieve this, the unit was equipped with full negative pressure with greater than 12 cycles per hour; laminar airflow and air released back to the atmosphere was HEPA-filtered; built-in UV lights; digital auto pressure gauges with alarm; sealed nurses' station; dashboard of call buttons; automatic doors; viewing decks; and windows for light and viewing of patients. At the time of its launch, there was no other facility in the Philippines with these features!

To build the Bayanihan Na! Isolation Unit, a private-public partnership was forged between Tiktok Philippines, St. Luke's Medical Center, the Zuellig Family Foundation, and the Bureau of Fire Protection (BFP). Dr. Berba recalled that the 29,000 firefighters of the BFP contributed 500 pesos each for this project, an admirable feat considering that these were tough times. The Zuellig Family Foundation donated P21 million, P15 million of which went to construction and P6 million to medical equipment.

The unit had four wards— the Kaagapay ICU (KICU), Kanlungan, Kalinga, and Kandili. The wards were named after Tagalog words, all suggesting the kind of environment that the unit was designed to create. *Kaagapay* meant support, *kanlungan* meant shelter, *kalinga* meant care, and *kandili* meant nurturing.

The Bayanihan Na! Isolation Unit was inaugurated on August 17, 2021, coinciding with PGH's 114th anniversary. The marker acknowledged the support of its sponsors and stated, "It is envisioned to provide excellent care not only in this current Covid-19 pandemic but in the future ones that are anticipated to emerge." It ended with this memorable exhortation: "Fight the fear. Believe in good science. Never let your guard down. Take care of each other."

Confirmed Covid-19 patients were then transferred to this facility, freeing up more hospital wards for non-Covid-19 patients. By March 3, 2023, the decline in Covid-19 cases enabled PGH to adjust its Bayanihan Na! Isolation Unit to admit other patients with highly infectious diseases like tuberculosis.



The PGH Bayanihan Na! Isolation Unit established to provide safe and quality care for Covid patients and for those with illnesses that will emerge.

A Deluge of Donations

The efforts of UP Manila and PGH in battling the pandemic would not have succeeded without the steady stream of donations from private citizens and corporate sponsors alike. Not all of these donations were in cash or kind; some offered vital personal services, words of encouragement, and other gestures that gave hope to the afflicted and inspiration and strength to their caregivers. The *bayanihan* spirit shone brightly in those dark times.

An overwhelming wave of citizens' support arose. As long as they had access to resources, people began giving, donating whatever they could to help ensure that frontliners were well equipped to fight the virus. From the poor to the rich, they came together—UP alumni, foundations, corporate citizens, and ordinary people alike; as individuals, groups, or formal entities; identified or anonymously, they contributed their support to UP Manila.

UP Manila received food donations, in-kind donations, and cash donations. Material support in various forms like all kinds of food, clothing like home-sewn PPEs, footwear, medicines, mattresses, blankets, toiletries, etc. were continuously being sent for patients, HCWs, and ancillary workers including janitors and security guards. Some donors provided trucks and vehicles that were used to pick up big or large quantity items. The arrival of a truckful of eggs made it necessary for the BNOC to schedule the donations of perishable items and coordinate with the Dietary Department as to the quantity and timing of food items to prevent a lot of spoilage.

There is a very long list of donors, and it would be impossible to acknowledge all of them here in this book. Some major and significant donations were featured in the *Healthscape Special Covid-19* issues, that included the Philippine Amusement and Gaming Corporation, San Miguel Corporation, Resorts World, and the National Grid Corporation of the Philippines, among others.

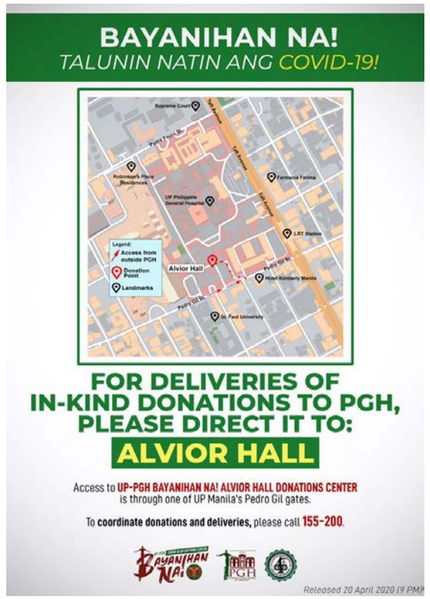
Vice Chancellor Dr. Michael Tee (left), Dr. Anthony Perez, Dr. Melfred Hernandez (right), and other volunteers receive a multitude of donations.

PGH atrium filled with large item donations

The Donations Arm of BNOC and Alvior Hall

Dr. Perez, head of the Donations Arm of BNOC shared his first-person reflection on Covid-19 and the repurposed Alvior Hall:

"After my appointment as head of the Donations Arm of BNOC, I expected to have a ministerial job at best; ready to be a backup to those physically manning the call center for donations and directing deliveries, listing them down in a logbook, and sending donors letters of gratitude on behalf of the UP and PGH community. The system looked simple—direct cash donations to the PGHMFI, in-kind donations to the storage room, and send food donations to the PGH personnel on duty.



"The complexity of the task assumed clarity when cash donations breached P100 million, when donations came in trucks, and unscheduled food deliveries arrived enough to fill the dietary hall. A more in-depth look into what we were trying to accomplish made us realize that we needed a system which will effectively direct donor support to the intended beneficiaries—the frontliners. We needed electronic and physical processes that were transparent, reproducible, and accessible to decision makers. We likewise required a dedicated manpower complement fully invested in UP's role in this battle of our generation. What was achieved by the BNOC opened my eyes to the infinite possibilities a group of UP volunteers from all over the system working together under the UP leadership could achieve for the PGH, UP, and the nation.

"Through the Office of the President, a group from UP Diliman developed a dashboard for use by the team to allow the public to view in real time the pledges of support (cash, goods, and food) for UP Manila and other units of the University. This gave the UP community and the donors access to the actual needs of PGH and other units, enabling them to make their support appropriate to the actual demands.

"Another group of industrial engineers from UP came up with an actual inventory system which allowed documentation of the donations as they came, logins at the drop-off points, and reports for the BNOC, PGH, and UP in real time. This same group likewise formulated the process flows in the actual donation drop-off sites, even giving estimates of the manpower requirements. By the time the work of the data visualization experts and the volunteer industrial engineers were completed, the Nurses' Home warehouse intended for use as the drop-off site was overflowing with donations in the first two days of operations of BNOC! The Donations Arm was now ready to match the enthusiasm of donors who wanted to make sure UP troops would not march into battle ill equipped.

"The response of the public to the call for support to UP and PGH was overwhelming to say the least. The PGHMFI was deluged with pledges of cash donations ranging from 200 pesos to a million dollars. In less than a month of operation, donors filled up Alvior Hall and the Paz Mendoza classrooms wall to wall.

"Donors from all walks of life called the BNOC and brought all kinds of goods to Alvior Hall—makeshift masks, packed vegetables, sacks of rice, disinfectants, bicycles, cots, foams, bike lights, hepa filters, electric fans, fruits, clogs, misting tents, X-ray machines, raincoats, aprons, home-made PPEs, industrial masks, washing machines, electric repellants, milk, and instant arroz caldo.

"My stint in the BNOC opened my eyes as a firsthand witness to the generosity of the Filipino. This outpouring of support is probably seen in times of disasters, calamity, and war. It also opened my eyes to the courage of those in the real frontlines treating patients as their own, emboldened by the groundswell of support from strangers likewise treating them as family. Equally impressive were the courage and selflessness displayed by the interns who volunteered to man the BNOC, manning the phones in the dead of night, attending to the calls of patients unable to physically consult PGH doctors. They patiently instructed donors how to get their pledged support to the coffers of the PGHMFI, and to deliver goods where they would be properly stored and accounted for. In the succeeding days, interns were joined by faculty, by administrative staff, by volunteers from all over UP, including guards and utility workers to receive and organize donated materials.

> *"What was achieved by the BNOC opened my eyes to the infinite possibilities a group of UP volunteers from all over the system working together under the UP leadership can achieve for PGH, UP, and the nation."*
>
> **- Dr. Anthony Perez**

"Alvior Hall has ceased to be a faculty center for leisure and social interaction. It has instead become one of the beacons of volunteerism looked upon as a symbol of hope. For it is now the gate through which the rest of the country expressed their gratitude and support by sending them everything from PPEs, greeting cards, Bibles, to dog food. Dr. Greg Alvior may not have imagined the faculty center named after him to serve this purpose; but he would have beamed with pride, along with the rest of the UP community."

There were also the big problems of fraud and thievery during those dark times when deceitful people tried to trick donors by pretending to be from UP Manila or PGH; but the single hotline number made it easier for donors and the infographics also warned the public to be alert against scammers.

One Donor's Way of Giving Back

The main halls of PGH are bedecked with many artworks. Should anyone be observant enough to read the artwork's label, one would notice a recurring name under the artist who collected and donated particular artworks at the main halls of PGH. In fact, almost all of the art donations, according to Director Legaspi, are from this one donor who was a former patient at PGH.

Director Legaspi says that both of the donor's parents died because of Covid-19. He spent P4 million for them in a private hospital. Thus, when he contracted Covid-19, he was fearful for his life. He did not want to go to the same hospital where his parents died, saying, "Doc, I'd rather go to PGH." In good time, he recovered and was able to return home. He called Dr. Legaspi, asking in disbelief, "Doc, is my bill correct? Only P67,000?" Dr. Legaspi replied, "Yes, that's all you need to pay." With that, this former patient then bought all those plants, paintings, and sculptures.

Donated artworks by a grateful patient.

At the time of the interview in March 2023, Dr. Legaspi said that donations were still coming in from this donor—new plants, new bougainvillea, and new psyllium. One person had a big heart to give. Dr. Legaspi personally curates them and decides which artwork goes where. When people saw this, other artists and doctors began donating their works. For example, the mother of a certain resident doctor would donate a creation.

UP Manila thanked its numerous donors in many ways. The popular way of thanking donors who went public was to have a message on its official Facebook page with a thank-you banner.

The first album was created on April 4, 2020, the second and third albums on April 6, 2020, and the fourth album on April 7, "dedicated to the 500 or more kindhearted individuals and organizations who helped the PGH's COVID-19 patients and frontliners."

Top: "Tapang at Puso ng mga Alagad ng Buhay sa Panahon ng Pandemya" by Toti Cerda.

Left: "Kapit Lang" by Roberto O. Santos

CHAPTER 4

It Takes a Village: Contributions in Other Key Areas

Covid-19 Research and Participation in Global Trials

Recognizing that the pandemic had an innate sense of urgency that forced the Health Sciences Center to seek solutions, UP Manila saw a large volume of Covid-19 related research work completed. In fact, within a month after PGH's designation as a Covid-19 referral center, there were already 50 studies that were ongoing. By 2022, there were more than nine hundred research registered with UP Manila Research Grants Administration Office (RGAO).

This unprecedented number of investigations on Covid-19 were done with great care. The main areas of interests delved on 20 themes such as the clinical aspects of the virus, its psychological effects, vaccine development, biomedical devices, and other concerns.

NIH was at the forefront of Covid-19 research. In collaboration with WHO, it led the Philippine Solidarity Trial and Convalescent Plasma Trial to determine how effective were some repurposed drugs being used in treating hospitalized Covid-19 patients. Trials were designed to answer the question on the effectiveness of hydroxychloroquine and lopinavir-ritonavir. The lack of benefit in reducing in-hospital mortality led to a recommendation against the use of these drugs. Some notable studies looked at the merit of adding various interventions such as immunomodulators, monoclonal antibodies, and convalescent plasma transfusion into the treatment of patients.

> *The pandemic tested our resilience; but NIH was able to respond with "fit-for-purpose-solutions" through research that led to evidence-informed policy and practice.*
>
> **- Dr. Eva Cutiongco-de la Paz**

Faculty members of the College of Medicine (who were also scientists at the NIH) were also heavily involved in all these Covid-19-related studies. As of September 1, 2022, the reported number of completed Covid-19-related research stood at 378, while 172 were still ongoing. There were 25 startup projects, for a grand total of 575 scientific undertakings.

Indeed, the UP Manila community and its researchers showed much generosity. For some studies, faculty members were using their own resources and devoting time on top of their existing duties.

Industry-sponsored research projects showed a slightly different trend with studies on Vaccine Development, Effect of Management of Non-Covid-19 Conditions, and topics needing urgent answers during the pandemic. The private sector also gave its share toward academic-based research.

In addition, the NIH through the Institute of Clinical Epidemiology led the development of Philippine COVID-19 Living Clinical Practice Guidelines (CPGs) in cooperation with the Philippine Society of Microbiology and Infectious Diseases and funded by the DOST. While there were existing international guidelines on Covid-19, there was a need to localize the recommendations from the evidence in our setting by local experts, end users, and other relevant stakeholders. All the Covid-19 Living CPGs were DOH-approved and adopted by the DOH and IATF.

It was not only PGH that anticipated the conclusions of all research, as HICU utilized them in giving out its guidelines; but the DOH and the IATF also based national directives and policies for the whole country on these results.

RGAO Covid-19 Research Dashboard as of December 2022

Experts' Technical Contributions: Membership In Different Bodies/Groups

The government tapped the expertise of UPM for most of its specialized and technical working groups. Many NIH institute directors and research faculty and staff members of the Colleges of Medicine and Public Health served as experts in the following government Covid response technical groups—DOH Technical Advisory Group, IATF TWG on Covid Variants, IATF Sub-TWG on Data Analytics, National Immunization Technical Advisory Group, Task Force T3, Vaccine Expert Panel, and other specialized groups.

Four of UP Manila's health experts were given the Order of Lapulapu, a national order of merit conferred by the president of the Philippines on government personnel and private citizens for exceptional service and merit: Dr. Marissa Alejandria, Dr. Anna Lisa Ong-Lim, Dr. Eva Maria Cutiongco-de la Paz, and Dr. Edsel Maurice Salvaña. They were recognized along with the IATF members and DOH officials at Malacañang's Rizal Hall on June 16, 2022.

All four health experts were members of the IATF Task Force on Covid-19 Variants.

UP Manila scientific experts were among those honored by Pres. Rodrigo Duterte in Malacanang Palace for exemplary service rendered to the nation during the Covid-19 pandemic. Four of the experts were conferred the Order of Lapulapu, namely Dr. Marissa Alejandria (1st row, 7th from left); Dr. Anna Lisa Ong-Lim (2nd row, 2nd from left); Dr. Eva Cutiongco-de la Paz (2nd row, 10th from left); and Dr. Edsel Salvaña (not in photo). Other honorees included UP Manila scientists who were members of Covid-19 groups and bodies, DOH officials, and IATF members.

1. Dr. Marissa Alejandria led the Philippine participation in the WHO Solidarity Trials for vaccines and drugs for the treatment of the coronavirus.
2. Dr. Anna Lisa Ong-Lim, a pediatric infectious disease specialist, served as a regular speaker in webinars, conferences, and similar events providing accurate, updated, and timely information on prevention and care for Covid-19 patients.
3. Dr. Edsel Maurice Salvaña contributed in determining the safety and benefit of the vaccines with emergency use authorizations in the Philippines' fight against Covid-19 and on the manageability of Covid-19 cases in the country during the vaccine roll-out.
4. Dr. Eva Maria Cutiongco-de la Paz, NIH's executive director, led the NIH in working closely with the DOH's Research Institute for Tropical Medicine (RITM) for the training of frontliners on biosafety and molecular biology techniques to perform RT-PCR SARS CoV2 testing.

In addition, group awards were also given to other specialists from UP Manila:

1. Dr. Cecillia Nelia Maramba-Lazarte - Member, Core Committee of the Health Technology Assessment Council (HTAC)
2. Dr. Shelley Ann de la Vega - Member of the National Immunization Technical Advisory Group

3. Dr. Raymond Francis Sarmiento - Co-chair of the IATF sub-Technical Working Group on Information and Communications Technology (ICT) for Data Governance and Member of FASSTER
4. Dr. Lulu Bravo - Chair of the National Adverse Effects Following Immunization Committee
5. Dr. Marita Tolentino-Reyes - Chair of the Core Committee of the Health Technology Assessment Council (HTAC)
6. Dr. Nina Gloriani - Head of the Vaccine Development Expert Panel
7. Dr. Jacinto Blas Mantaring III - Member, Core Committee of HTAC
8. Dr. Imelda Peña - Member, Subcommittee on Drugs, HTAC
9. Dr. Josefina Angeles Tuazon - Member, Subcommittee on Other Health Technologies, HTAC

Capacity Building for Testing

To address the Covid-19 testing needs of the Philippines, NIH under the leadership of its Executive Director Dr. Eva Cutiongco-de la Paz immediately set up a Covid-19 testing laboratory. Within two weeks, this laboratory was accredited at Biosafety Level 2. Before the NIH laboratory was equipped to run tests, the DOH-RITM was the only facility doing the testing for Covid-19 until March 2020. Their turnaround time was 10-14 days because of the volume of tests being done for the entire country.

Dr. Raul Destura announcing the development of Gen Amplify® RTPCR Detection Kit on CNN

The GenAmplify® Corona Virus Disease-2019 RT-PCR Detection Kit that tests for the presence of SARS-CoV-2 was the first Filipino-made nucleic acid kit developed at the NIH and Philippine Genome Center for commercial use; thanks to a P53.2M funding from DOST-Philippine Council for Health Research and Development (PCHRD) for its production. Being locally produced by a team of scientists led by Dr. Destura made it more accessible and cheaper. When it was launched, the total price was P1,478.40 inclusive of the RNA extraction kit per test. This was much less than the P8,500 price of other testing kits in the international market. GenAmplify was rolled out to various hospitals throughout the Philippines after exhaustive field testing

Thus, NIH was able to expand the nation's testing capacity at this crucial time. In the beginning, it served 88 hospitals and quarantine centers of the DOH. This laboratory recorded a total of 81,386 SARS-CoV-2 samples processed from March 2020 to February 2022. Later on, PGH also became another testing center to cater to in-patients. This added to the testing capacity of UPM.

Efforts did not stop there. The DOH tapped NIH to conduct biosafety training and hands-on molecular training for Covid-19 RT-PCR testing. By April 6, 2020, 1,552 participants completed training. This greatly expanded the testing capacity nationwide.

SIBOL Task Force Convened to Fight Covid-19

"SIBOL (Tagalog for germination) is a UPM College of Medicine-spearheaded joint effort with UPD that has the objective of using locally sourced material and technology to produce surgical and medical equipment, most of which if not all are imported and often unaffordable, inappropriate, or not readily available. This program was recently given a grant by the DOST PCHRD in December 2019 to undertake innovation projects and at the same time set up an innovation office with a laboratory within UPM. This would double as both a testing area for prototypes and a surgical skills laboratory for medical and allied medical training. The SIBOL team includes collaborating clinicians from UPM and engineers and scientists from UPD.

In the present pandemic and consequent moratorium on elective work, the SIBOL core group decided to convene the SIBOL Covid-19 Task Force in a bid to support the fight against this viral onslaught especially in the context of the PGH being declared a Covid-19 hospital by the DOH. Initial assessment has led the group to prioritize these areas and formed teams: Disinfection, PPE, and Telemonitoring.

Subgroups under each of the above teams are working on single person versions of sanitation tents, simulation of negative pressure rooms, disinfection of anesthetic equipment and PPEs; reusable N95 quality masks, coveralls using locally available material, face masks with possible PAPR (powered air purifying respirator) capability; and telemonitoring in both triage and high risk areas such as Covid-19 wards. Already the teams have increased in numbers, with more faculty and experts from UPM, UPD, and even other universities (DLSU) and DOST offices, including PTRI (Philippine Textile Research Institute) and PNRI (Philippine Nuclear Research Institute) working together to try and achieve these urgently needed innovations.

The SIBOL Covid-19 Task Force is working with the full support of the DOST- PCHRD, the Biomedic PH or PBDIC (Philippine Biomedical Device Innovation Consortium), the UPM and its College of Medicine, UPD and its College of Engineering, and the respective TTBDOs and the UPM-NIH."

Dr. Charlotte Chiong
Dean, UPM College of Medicine

> *Initially, we were fighting this pandemic in the dark; but UP Manila was able to light a candle through science, research, and innovation.*
>
> **- Dr. Edward Wang**

The Crisis Team together with doctors, nurses, and support staff strike a triumphant pose at the PGH atrium.

Telepresence. The Covid-19 crisis made everyone strictly adhere to physical distancing and isolation as safety practices. For doctors, nurses, staff, and trainees, there was the additional burden of donning full PPE gear. There were instances when caregivers only needed to check on the patients visually or just talk to them and offer reassurances; but going in-person put doctors and residents at risk and voices came off muffled and difficult for the patients to understand. This communication problem was solved with telepresence.

The SIBOL Covid-19 Task Force-Telepresence Terminals for Covid-19 Response Team headed by Dr. Nathaniel Orillaza Jr., a professor of Orthopedics at UP Manila, developed a device that allowed clear communication and protected healthcare workers from long exposure to patients. The telemonitoring technology answered calls only from authorized accounts using available teleconferencing and remote-control applications. The remote but effective monitoring of patients lessened caregivers' chances of becoming infected themselves.

Tele-Kumusta. In-person watchers and visitors—familiar figures in every Filipino hospital—were not allowed inside the hospital; and for this, the Tele-Kumusta initiative also known as "e-dalaw," was devised for patients to see their loved ones through tele-presence (free video calls). Dr. Homer Co of the Health Operations led this initiative. Laptops were placed in the patients' units with the rolling cart-tables repurposed as their platforms. Free Zoom video conferencing applications and other technologies were used with free wi-fi provided by PGH.

Medical Social Service workers contacted patients' relatives and both sides were able to interact for about 20 to 40 minutes. This emotional connection with loved ones alleviated the suffering of the patients and gave their relatives some peace of mind.

MyBESHIE. The "My Bot Ensuring Safety and Health in Isolated Environments (MyBESHIE) Robot" was a telepresence device that allowed a person to communicate within a local network with another person who was in a remote location.

This "no-touch"-operated robot enabled a medical specialist to treat patients in other locations remotely. MyBESHIE was supported by an onsite server and did not require internet connectivity. The compact design came with disinfection features to be Covid-19-proof, tilt and follow-me functionality, and security features. It was easy to use even for patients without technical know-how like children and the elderly.

In this updated design, the screen was intentionally made larger to show more facial features to hopefully convey more empathy to the patient communicating with the other healthcare worker on the remote end.

The MyBESHIE Robot was invented by Dr. Nathaniel Orillaza Jr., Dr. Prospero Naval, Mr. Norman Pardalis, Dr. Luis Sison, Ms. Angelyn Mercado, Mr. Mark Edward Sampayan, Mr. Jerix Ignacio, Mr. Julius Bryan Abesamis, Mr. Ygi Martija, and Ms. Jessica Camille Mamaril.

Powered Air-Purifying Respirator (PAPR). At the onset of the pandemic, UP SIBOL received 41 units of full-face air purifying respirators from the Department of Science and Technology-Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS) with additional filters for hospital healthcare workers. The respirators were originally used in January 2020 following the Taal Volcano eruption when ashfall was a big health problem.

Since there were only 41 donated respirator units, the UP SIBOL thought of producing low-cost PAPRs that would protect HCWs from the coronavirus. It would offer full-face protection, be breath-responsive, have particle filtration, and provide contaminant-free air in a Covid-19 environment. It had to have a battery-operated blower to give clean air through a tight-fitting respirator in a loose-fitting hood or in a helmet.

The PAPR's inventors were Dr. Samuel Arsenio Grozman, Dr. Philip Fullante, Dr. Magdaleno R. Vasquez, Jr., Dr. Miguel Sandino Aljibe, and Engr. Lance Tristan Pengson. PAPR was low-cost and scalable for mass production. The project was funded by DOST-PCHRD and was to continue development for chemical and biological protection compliant with the standards of the National Institute for Occupational Safety and Health.

RxBox for Covid-19 Care. Telehealth work began as early as 2004 at the UP-NIH National Telehealth Center (NTHC) when it secured an eGovernment grant from the National Commission on ICT. NTHC was tasked to link rural communities with medical experts in UP Manila. The RxBox prototype had a blood pressure monitor, pulse oxymeter, temperature sensor, and electrocardiogram.

When the pandemic struck, Dr. Geohari Hamoy of the UP SIBOL Covid-19 Task Force-Telemetry System tapped the RxBox to lessen the exposure of HCWs to the coronavirus while monitoring the clinical status of patients in high-risk wards. The latest RxBox Telemetry System allowed nurses to remotely take the vital signs of patients via a monitoring dashboard that had a tele-referral functionality where electronic data can be transferred to a different facility.

The RxBox Telemetry System inventors were Dr. Luis Sison, Dr. Portia Grace Fernandez-Marcelo, MD, MPH, and Dr. Geohari Hamoy,

Electronic Stethoscope, "E-Steth." The "E-Steth" was an electronic stethoscope that allowed the HCW to listen to breath sounds and auscultate other body organs at a safe distance. Furthermore, the device enabled auscultation without compromising the PPEs of healthcare workers.

A low-cost, acoustic-electronic hybrid stethoscope, it was an enclosed system in a simple plug-and-play device. The final prototype was equipped with a volume controller (an external device), LED power indicator, one-coin cell battery, switch frequency (300 Hertz-heart; 2000 Hertz-lungs), a button holder, and an external jack connector. The prototype measured 43.18 mm x 60.96 mm, small enough to fit in an adult's hand.

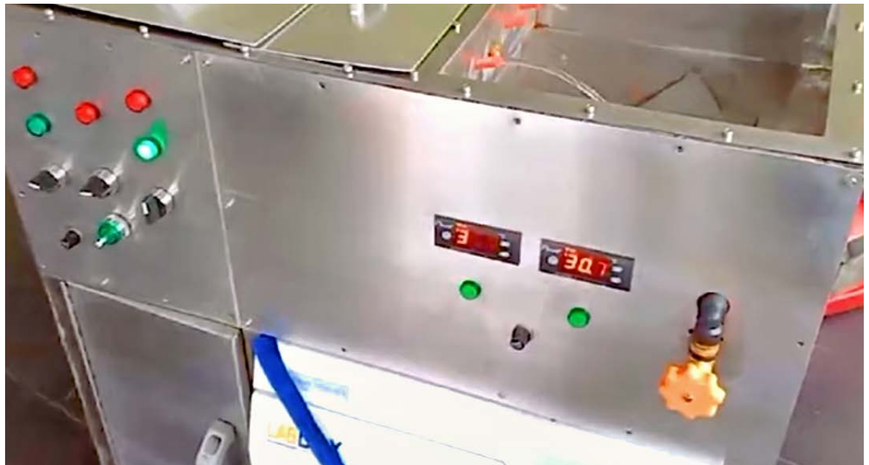
Dr. Michelle Cristine Miranda, then a third-year PGH pediatric resident, initiated the project for the locally produced electronic stethoscope, with funding from DOST-PCHRD. Dr. Miranda created it with a team of classmates and UP Diliman engineers Charleston Ambatali and UP SIBOL's Jason Pechardo.

Echo On-Sight. The Echo On-Sight was a real-time telepresence device that enabled experts to see ultrasound images remotely. During the pandemic, the supervision of trainees was limited, and timely interpretation of bedside echocardiograms was not possible. But through off-site point-of-care guidance, specialists situated far from the patients could view the images and give timely interpretation of bedside echocardiograms.

The principal investigators for this technology were Dr. Jose Donato Magno, a cardiologist and head of UP-PGH Echocardioraphy Services, and Dr. Richard Hizon, an adult nephrologist.

Cleanintubate. A laryngoscope is a medical device that is used during insertion of an endotracheal tube in patients needing ventilatory support; or in other cases it is used to visualize the larynx to look for causes of pain, blockage, narrowing, or swallowing difficulties. Laryngoscope blades require high-level disinfection. They are manually cleaned and disinfected in a tedious and time-consuming process. During the pandemic, this could expose the staff to the Covid-19 virus. To lessen human contact and lessen contamination risk, Cleanintubate was born.

Cleanintubate was a disinfecting device that came with an automated full cycle of cleansing, disinfection, and sterilization functions. The fully automated Cleanintubate came in portable and non-portable prototypes with a minimal one-touch activation design. Its inventors were Dr. Catherine Co, Engr. Jason Pechardo, Dr. Ma. Teresita Apsi, Prof. Ed Magdaluyo, and Engr. Edgar Argote. The study received funding from DOST-PCHRD and was conducted in collaboration with PGH, NIH, UP Diliman, DOH, and DOH Hospitals.



Reusable SIBOL Face Mask. The SIBOL Face Mask was created with reusability in mind, as an environment-friendly solution to lessen generation of solid waste. This reusable face mask had the capability and high efficiency to filter out pathogens at the submicron sizes. Furthermore, the breathable nanomaterial filter could withstand disinfection procedures up to at least 30 times of use (equivalent to 30 days). The filter used was a multi-layer design with piña fibers, cotton, and a biodegradable polycaprolactone nanofilter film. Additionally, the mask frame had the advantage of easily fitting face contours.

This project received funding from DOST-PCHRD and also had a research collaboration agreement with Vaquform to continue product development and marketing.

Prone Pillow Plus. Designed for pregnant and obese women with acute respiratory failure, the Prone Pillow Plus was a supportive pillow that allowed the comfortable and safe prone positioning of the patient. Its creation was inspired by a pregnant Covid-19 patient whose fetal heart tones and uterine contractions needed monitoring.

The patients lay prone on the pillow with arms tucked at their sides or abducted at less than 90 degrees with elbows flexed and palms down maintaining neutral alignment. This position gave access to the patient's body for monitoring; and in this position, ventilation and perfusion throughout the lungs were better, eventually leading to better oxygenation.

The Prone Pillow Plus was invented by Dr. Maria Antonia Habana, Engr. Louis Danao, Dr. Julieta Germar, Dr. Angela Aguilar, Dr. Ruth Padua, and Dr. Albert Albay.

PPE Disinfection. When Covid-19 caused a shortage of N95 respirators and masks for HCWs, the reprocessing of used N95 respirators became necessary. A disinfection alternative that aimed to extend the shelf-life of the existing supply was needed. The first prototype, a decontamination oven, was built with ultraviolet C (UVC) light component and a hydrogen peroxide vaporizer (HPV). Post-decontamination viability tests showed promising results. The prototype also had the potential to process other critical items and medical equipment that were HVP-compatible so they could be reused.

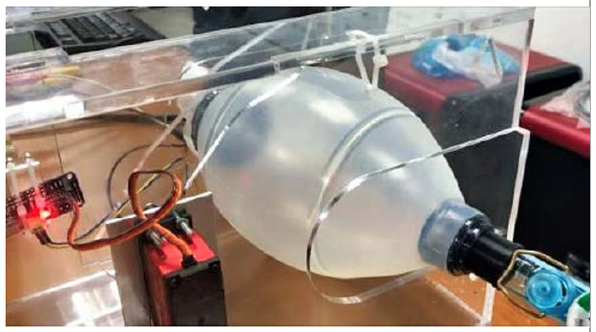
The "SIBOL Fabrication and Characterization of UV and Hydrogen Peroxide Vaporization for Disinfection of N95 Respirators" project received funding from DOST-PCHRD. The enhanced version used ultraviolet germicidal irradiation (UVGI) light, a form of UVC light that is part of the natural light spectrum.

The technology generators were Dr. Emmanuel P. Estrella, Dr. Eng. Magdaleno R. Vasquez, Jr., and Mark D. Ilasin.

SaniPod Disinfection Cubicle. The SaniPod Disinfection Cubicle was a "no-touch" self-contained disinfection cubicle featuring an innovative fogging technology system in combination with far-ultraviolet C which can inactivate a wide spectrum of microbial pathogens. Specifically designed for human use (e.g., HCWs, safety officers, disposal service personnel), the SaniPod helped address the risk of contamination during PPE removal.

SaniPod was funded by generous donors together with DOST-PCHRD and developed and designed by Dr. Edward Wang and Dr. Catherine Co of the UPM CM and SIBOL team in collaboration with Engr. Ed Magdaluyo, Jr., MS, PhD; Engr. Jason Pechardo, MS, of Department of Metallurgical and Materials Engineering, College of Engineering, UP Diliman; August Patacsil, industrial designer, project leader; and Jenna Gonzalez, RN, science research specialist.

Other Local Technologies



Mechanical Ambu Bag Insufflator. When patients develop severe difficulty of breathing, the need to provide high flow oxygen may require a manual ambubag. Ambubagging is difficult because the person administering it has to deliver the correct volume of air at a steady pressure and frequency.

To overcome the inconsistency and unreliability of manual ambubagging, Dr. Rafael Cruz Bundoc, a professor of Anatomy and Orthopedics from UPM CM, developed the Mechanical Ambu Bag Insufflator in collaboration with other academic and private groups. It was an innovative portable device that enabled the ambubag to deliver oxygen-rich air at a constant volume, pressure, and rate. It was lightweight enough to be brought to the field in cases of calamities and could accompany the patient during transport.

From OstreaVent to OstreaVent II. For more than five years, the OstreaVent ventilator has been used for newborns. During the pandemic, UPM CM Dean Chiong approached Dr. Enrique Ostrea, the creator of the OstreaVent and an adjunct research professor of NIH and a corresponding member of the DOST-National Academy of Science and Technology, to convert it for adults.

He completed the OstreaVent II prototype in collaboration with engineers from the UP College of Engineering and the DOST-Metals Industry Research and Development Center (DOST-MIRDC) at a cost of $10,000 (much cheaper than imported ventilators).

Ginhawa Ventilator. The program to make low-cost ventilators started in 1987 when UP-PGH pulmonologists Dr. Camilo Roa, Jr. and Dr. Abundio A. Balgos made the first mechanized ventilator, the Pulmo 1. In 1993, Bag-in-a-Box or Pulmo 2 was made and after a hiatus, UP-PGH eventually secured a DOST-PCHRD grant in 2011.

The Ginhawa (also called ReliefVent) ventilator was the latest design which was a low-cost ventilator that could be used by both children and adults. It was affordable, safe and effective, compact, easy to operate, and used AC/DC power with backup for eight hours.

Technologies And Innovations Generated

The National Telehealth Center (NTC) of the UP-NIH developed the UP Manila Bayanihan Na! Employee Symptoms Tracking System (BESTS) application. The BESTS link for UP Manila faculty, staff, and students is at https://bests.upm.edu.ph/ while guests may use the portal at https://bests.upm.edu.ph/guest.

It was on June 29, 2020 when Chancellor Padilla issued Memorandum No. CCDP-2020-101 instructing Deans, Directors, and Heads of Units and Offices on the "Mandatory use of the UP Manila Bayanihan Na! Employee Symptoms Tracking System (BESTS) Application" effective July 1, 2020. Employees, whether working from home or onsite as part of the skeleton staff workforce, were required to register and use the BESTS application. BESTS logged the temperature and self-assessed symptoms then being monitored because of the pandemic.

The application helped monitor and track UPM employees so that appropriate referral for treatment and assistance could be readily given them. This worked well within the established Covid-19 Response Team with three focal persons assigned per unit who addressed the concerns of students, faculty, and staff.

Another innovation that was conceptualized and initiated by Vice Chancellor for Administration and Finance Dr. Arlene Samaniego was the Online Daily Time Records System during the work-from-home arrangement during the periods of lockdown.

Strategies in Academics and Training

In the Philippines, the pandemic wreaked havoc on education. This was on top of the deteriorating state of education in some institutions at all levels, public or private, even prior to the pandemic. The restrictions and requirements of the lockdowns tentatively stopped the holding of face-to-face classes in all public and private schools in the country. The abrupt shift to online learning utilizing synchronous and asynchronous modalities had to be done to ensure the students' continuing formal education.

As the country's national health university—composed of nine degree-granting units, National Institutes of Health, Philippine General Hospital, and outside campuses of the School of Health Sciences in four remote provinces all holding mostly onsite classes—UP Manila was affected greatly by the temporary stoppage of onsite learning imposed by the pandemic. Ensuring protection for the students, faculty, and staff and maintaining the high quality of education amid the shift to online approaches became the battle cry of UP Manila.

The biggest challenge for UP Manila was how to sustain the excellence and relevance of its education with the sudden shift to online and blended approaches to learning while ensuring public health and safety. One of the highlights of UP Manila's answer to Covid-19 therefore, was its academic response. While dealing with the health issues, intense focus was made on the academic shifts and adjustments that ensured that the health professionals who will serve our people are top-notch and will graduate on time.

While UP Manila had been employing some blended learning strategies pre-pandemic, the need to employ fully remote teaching and learning became more imperative, and Covid-19 fast tracked this virtual learning deployment.

Designation of the NIH, UP Manila as a training provider for Biosafety and Biosecurity

When the pandemic struck, the UP Manila community under the leadership of Vice Chancellor for Academic Affairs Prof. Nymia Simbulan lost no time adapting quickly to the virtual environment, the university having suspended classes and patient interactions. The faculty and students and most of the university's staff transitioned to work and study from home, became more acquainted with online and remote learning, and exercised flexibility in adapting to blended learning and training methods. Pivoting to remote teaching/learning using Canvas and ensuring faculty and student training proved a handy and imperative innovation.

The faculty and students demonstrated resilience and commitment in fulfilling the goals of education by taking on various tasks and responsibilities they were not adequately prepared for and with limited technological capabilities in terms of connectivity, devices, and other tools needed for remote learning.

While learning and adjusting to new and/or different ways of meeting daily needs, doing work from home, communicating and interacting with others, and providing assistance to peers and students in need; the faculty did not waste time and did not hesitate to become students in learning the fundamentals and acquiring skills in the shift to remote learning.

The major strategies employed to continue fulfilling the educational mission of the university included the following:

Remote Learning Basic Principles—Development and accessibility of Course Redesign 101 through the UPM Virtual Learning Environment (VLE) that discussed remote learning and its basic concepts and principles.

To assist the faculty in redesigning courses, Course Redesign 101 was developed and made available by the Office of the Vice President for Academic Affairs (OVPAA) Committee on Remote Learning. Course Redesign 101, which can be accessed through the UPM VLE account of the faculty, discusses what remote learning is and its basic concepts and principles. The course presented the 6 steps in course redesign which included: 1) know the learners and the learning context, 2) organize the course content, 3) select and curate learning resources, 4) design learning activities, 5) determine ways of assessing students, and 6) write the course guide (course syllabus). These various components of course redesign were what the course packs contained and uploaded in the respective learning management system (LMS) account of the faculty and/or sent to students with problematic internet connectivity in print or in a USB.

The oblation bathed in color during UP Manila's Foundation Day celebration amidst Covid-19

Faculty Redesign of Courses and Student Dialogues—Participation of the UPM faculty in relevant webinars that assisted them in redesigning courses and oriented them on the academic plans for AY 2020-2021; and student dialogues where the faculty and students clarified plans, such as on internet access, ensuring security and confidentiality, avoiding cheating during online written and oral examinations, changes in the policies and deadlines for faculty, mechanism of delivery of course packs for students, and ensuring that engineering and administrative controls are in place and adequate before clinics are opened.

Simultaneously, the faculty of the different departments and academic units embarked on their course redesign by reviewing and adjusting the curriculum of their various courses. Consistent with the OVPAA Memo Nos. 2020-68 and 2020-68A which provided the academic plans and guidelines in the preparations for remote learning in AY 2020-2021, course redesign entailed determining the sequencing of course offerings, i.e., what courses can be offered during the first semester via remote learning and those which can be postponed to the second semester; decoupling of lecture and laboratory courses, meaning offering the lecture component in the first semester and the laboratory in the second semester with students receiving a "Deferred" grade in the first semester and getting a final grade once the laboratory component has been completed in the second semester.

The course redesign also entailed deciding on the mode of delivery of courses, i.e., remote, face-to-face, blended, etc., and identifying the staff requirements in teaching the courses particularly the hiring of teaching assistants or teaching fellows, if necessary.

Shift from traditional cadaver dissection to virtual dissection table

UPM-wide faculty and student dialogues were held in June. Sponsored by the OVPAA with the UPM representatives to the Committee on Remote Learning and the Office of Student Affairs (OSA), the online activities were intended to present the academic plans for AY 2020-2021. The dialogues also provided an opportunity for the faculty and students to raise questions, clarify plans, and share their views.

Capacity Enhancement Projects—Formulation and carrying out of capacity-enhancement projects and activities by the faculty and students as preparations for the opening of the first semester classes, major aspects of which were the redesign of courses and active participation in the Canvas training.

Still part of the preparation for the opening of classes for the first semester, UPM faculty participated in the webinar-workshop organized by the OVPAA on "Taking Stock and Gearing UP for AY 2020-2021" for 3 consecutive Mondays in June with the Vice President for Academic Affairs, Dr. Cynthia B. Bautista, serving as resource speaker.

Meanwhile, the Medical Education Unit of the College of Medicine organized a series of workshops to capacitate the faculty in the shift to remote learning. The half-day sessions focused on various aspects of course redesign including: 1) Planning a course module; 2) Selecting the Learning Resources, Instructional Methods, and Delivery Strategies for the Module; 3) Designing Assessments for the Module; and 4) Writing the Guides for the Module. In attendance were department chairs or faculty with decision-making authority in the department, module coordinators, and at least one faculty per module knowledgeable or familiar with LMS use.

A strategy utilized for medical students was for them to take online courses in preparation for the first semester, AY 2020-2021. Students who needed to enhance their knowledge and skills in Biochemistry and Pharmacology were enrolled in online courses offered by the Harvard School of Medicine in August. Meanwhile, the clinical rotations of interns in PGH were shifted to the virtual mode.

Later during the first year of the pandemic, UP Manila with the permission of the IATF, bravely opened PGH for the clinical clerks and interns. Guidelines were set to ensure their safety.

Safe return to limited face-to-face classes by July 2021 and full face-to-face classes by the second semester 2022-2023 were made possible through the efforts of Vice Chancellor for Planning and Development Dr. Michael Tee. These entailed careful planning and execution of key strategies, namely the retrofitting of classrooms and laboratories and putting up of safety protocols in compliance with IATF and CHED guidelines that UPM's College of Public Health helped developed. The colleges of UPM were among the few applicants approved for limited face-to face classes after the first visit of CHED inspectors who recognized UPM's due diligence in preparing and ensuring the safety of students. These strategic changes were followed by other universities who wished to start onsite classes as well.

The medical internship in PGH became a model that inspired the CHED and DOH to allow this program in other hospitals, provided they satisfy the requirements of both agencies. It affirmed that experiential learning could proceed even during the pandemic.

The guideline that was used in PGH was even added in the joint memorandum circular as a reference for other hospitals. It paved the way for limited face-to-face classes for nursing, medical technology, physical therapy, midwifery, public health, and dentistry. The colleges' diligence in retrofitting classrooms and putting up health protocols to ensure the safety of the faculty and students as per the guidelines of the IATF and CHED was recognized on CHED's first visit.

Learning Management System

Canvas was introduced as an additional alternative LMS at UP Manila as early as December 2019; such that when the pandemic struck, training on its use was already ongoing. Efforts in planning and deploying Canvas in the four campuses of UP Manila, namely Manila, Baler, Koronadal, and Palo, were done within a narrow window of time as UP Manila abruptly shifted to full remote learning in the thick of the Covid-19 pandemic.

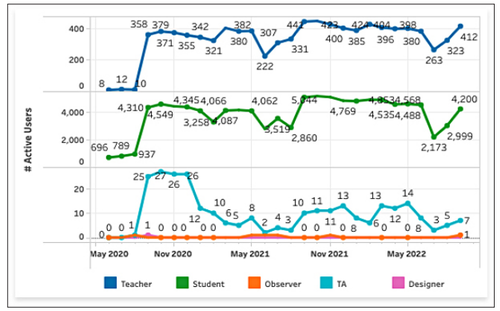
A Project Management Team led by Dean Marilie Aguila of CAMP was immediately constituted by the Chancellor to develop a plan and strategy on how the new LMS will be rolled out to the faculty, students, and staff. The identification of Canvas Champions was likewise done at the level of the department/unit of every college.

Canvas was seen as a tool to enhance and eventually transform teaching and learning in an environment tailored to the resources and context of faculty and students. As such, it was envisioned to be used as a platform for varied instructional technologies across the spectrum of low to high bandwidth, whether in asynchronous or synchronous activities and forms in between. This vision drove the rest of the implementation activities.

Milestones for account setup and configuration, training, implementation, and evaluation were completed prior to the official start of subscription to Canvas on July 1, 2020 and the go-live date at UPM on September 10, 2020, the first day of classes of the first semester of AY 2020–2021.

The adoption of Canvas at UPM during the pandemic highlighted its usefulness as a tool not just for modernizing learning, but also for connecting students with the course content, students with their teachers, and teachers with each other in the case of team-taught courses.

With the integration of other applications related to teaching and learning with Canvas, the use of the technology became less fragmented. The adoption of Canvas has increased since 2020.



> *Confronted by a world characterized as volatile, uncertain, complex, and ambiguous or VUCA, university constituents while upholding the principles of honor, excellence, and service, are expected to strengthen their resilience, openness to change, and creativity.*
>
> **- Prof. Nymia Simbulan**

According to VC Simbulan, "Confronted by a world characterized as volatile, uncertain, complex, and ambiguous or VUCA, university constituents while upholding the principles of honor, excellence, and service, are expected to strengthen their resilience, openness to change, and creativity. The numerous challenges aggravated by the onslaught of the Covid-19 pandemic on lives, communities, institutions, and societies dictate that the UP Manila, particularly the faculty, remain steadfast in their role as facilitators of learning, producers of knowledge, and catalysts for social change."

The PGH Internship Program

PGH Deputy Director for Health Operations Dr. Stella Marie Jose conducted a general orientation for the incoming CM year level 7 and graduates from other medical schools who were accepted to the PGH internship program on June 22, 2020.

The webinar, the first online orientation for interns ever conducted in UP Manila, was of vital importance to the 329 medical interns as the relevance of internship training in PGH during those unprecedented Covid-19 times was explained. In compliance with the directives of the CHED and the Association of Philippine Medical Colleges Foundation, face-to-face interactions in the wards, emergency room, outpatient clinics, and the community would not be allowed during the general quarantine period to minimize the risk of acquiring the coronavirus.

In response, the Learning Unit 7 Academic Committee headed by Dr. Allan Dionisio, UPCM Associate Dean for Academic Development Dr. Coralie Dimacali, and Dr. Jose crafted the revised internship program. As no patient encounters would be possible for the first two months of internship that commenced on July 1, 2020, the major learning strategy was an intensive review course on the various subjects of the clinical departments. These short courses augmented the cognitive knowledge of the interns and prepared them for their clinical rotations when actual interactions with patients could be permitted.

Dr. Johanna Cañal tours UPCM medical students around the PGH Dept of Radiology after her online lecture.

While there were many challenges for both the trainees and trainers, CM and PGH provided the learning platforms for the interns to achieve the most in their final clinical year of training. As there was no substitute for learning hands-on, the faculty and medical consultants innovated virtual means to equip the interns with the necessary skills and attitudes of a five-star physician.

When the quarantine restrictions were lifted, the interns were closely supervised in their clinical rotations in the non-Covid-19 wards, the outpatient clinics, and the community.

Indeed, a crisis like the Covid-19 pandemic brought opportunities for CM and PGH to transcend their limits. Both did their best to provide the environment needed for their interns to become compleat physicians.

Initiatives of Other Colleges and Offices

PGH, NIH, and CM were at the center of this Covid-19 maelstrom, but the whole UP Manila community—eight other colleges and offices—rose up and became strong braces in this unified response. Volunteers from the faculty, students, staff, and alumni readily enlisted as soon as the BNOC was set up. All forms of fund-raising activities, big and small, were started by all colleges and their student and alumni organizations. Some colleges also offered their facilities to become sleeping quarters for HCWs and support staff as part of the Panatag na Kanlungan.

Each college innovated and devised the most appropriate learning teaching techniques to keep their students educated within this online milieu, while at the same time offering programs to alleviate the mental and psychological burden everyone was subjected to. Webinars on topics of the colleges' specialties were regularly held that kept not just their constituents but even the public updated and well informed. UP Manila became one big family, each one contributing what it could to defeat this malady.

National Teacher Training Center for the Health Professions (NTTCHP). NTTCHP contributed to the Covid-19 response by helping their students—the frontliners—be better teachers and health professionals for their students and patients. NTTCHP may not be a "white" college like UPM's four famous health-focused colleges (College of Medicine, College of Pharmacy, College of Dentistry, and College of Nursing), but their people chose to be frontliners who supported PGH. During that time, a number of NTTCHP students, alumni, and faculty bravely faced the virus and gave support to the management team in PGH and other hospitals by going on duty.

In *Healthscape*, Dr. Melflor A. Atienza, the NTTCHP dean, wrote articles—"Teachers (of NTTCHP) Acts" and "ICE in FIRE: Enhancing Learning through Technology"—that detailed their experiences as they shifted to pure online teaching, employing the techniques of substitution, augmentation, modification, and redefinition.

NTTCHP faculty and students ready to volunteer

In addition to the shift to online learning, they also set up a weekly Zoom meeting with students called *Kumustahan at Kulitan, ang Kasiyahan ng NTTCHP Family*, a Covid-19 information and psychosocial support hotline. A short video was also made, titled "NTTCHP Booster," to inspire their constituents.

University Library. With the closure of the UPM library building, the library shifted to providing free content online, especially materials related to Covid-19. Making these resources available to the UPM community was crucial in assisting the students, faculty, and researchers who were remotely studying and working on Covid-19-related research.

The Covid-19 Monitor Research Tracker (https://www.unboundmedicine.com/ucentral) was accessible for free within UP Manila until August 2023.

Office of Student Affairs (OSA). OSA provided vital support to UPM's students and helped them achieve their academic goals. Like many others, they shifted to online activities and had several webinars on mental health promotion.

The Guidance and Counseling Program (GCP) of OSA held six important webinars under their GCP Mental Wellness and Suicide Prevention Series, namely:

1. Importance of Mental Health in Wellness
2. Caring for My Mind and Heart Through Meditation
3. The Power of Positivity
4. Understanding and Addressing Addiction
5. Mindfulness and the RAINS Method
6. Managing Internal Conflict

The LiftUP app, a mobile application for mental health first aid, was launched in 2019 for counseling and to give psychosocial support to UPM students. In 2022, UPM's BS Computer Science students Ivan R. Baluyut, Cornelius Ahus R. Enriquez, and Angelo Joseph A. Villaluz together with Ms. Perlita E. Gasmen who served as an adviser from the UPM's Information Management Services (IMS), upgraded the app with a newly designed platform. They presented the revised app on August 17, 2022 to the GCP.

LiftUP Version 2.2 was updated and launched in Google Play Store for free on September 22, 2022 on Android OS by Nexbridge Technologies, Inc. It was described as "a messaging application that will be able to help UP Manila students arise from the difficulties in their lives in a safe and inclusive environment. It will help the members of the UP Manila community lift each other up."

College of Arts and Sciences (CAS). CAS needed to change its instructional methods due to the lockdown quarantine protocols. Being different from other UPM colleges for having arts and science degree offerings made the online shift possible with minimal departures from the established way.

CAS through the Office of the Associate Dean for Academic Affairs created a Committee on Online Instruction intended to "gather, curate, develop, and disseminate resources for online instruction to the college faculty." The Committee developed infographics on setting up and using Zoom, faculty Guide on Transitioning to Online Instruction, how to access and use Creative Cloud (Adobe Suite) resources, and available UPM library resources. It also produced instructional videos on how to do screen recording and video lectures using Powerpoint and OneNote. Moreover, members were also tasked to facilitate the training of their department's faculty on the use of Canvas and VLE as well as other instructional tools.

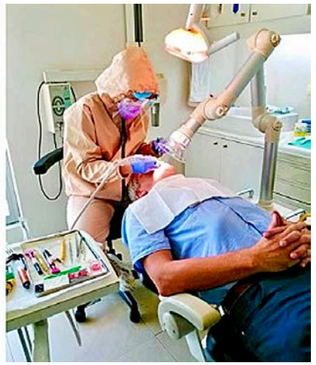
CAS' Department of Physical Education. One of the pioneering initiatives was the CAS' Department of Physical Education's Project Wellness (Maintaining Wellness at Home) with the hashtag #ProjectWellness. It covered physical, intellectual, mental, social/relational, emotional, and spiritual wellness.

On physical wellness, the infographic "Move Your Body" had colorful art and advice on exercise for children, adolescents, and adults. The infographic also distinguished between moderate and vigorous intensity activities.

"CASama sa Quarantine" as FB webinars, especially on the topic of One Health and Planetary Health, were regularly held that discussed the origins of infectious diseases like Covid-19 and solutions for controlling or ending these diseases.

The **Ugnayan ng Pahinungod** continued conducting relief operations all throughout the Covid-19 pandemic. In October 2021, UP relief operations and medical assistance were provided in Buguias, Benguet. Also, in partnership with the SPC sisters of St. Paul University Manila on Pedro Gil, a community pantry was set up during the height of Covid-19.

College of Dentistry (CD). CD had to overcome great obstacles to be able to continue educating its students during the pandemic. Vice Chancellor Tee and his team worked tirelessly to make these classrooms and laboratories safe for dental training to proceed. Retrofitting of several important clinical areas was performed with installation of heating, ventilation, and air conditioning systems. These areas needed air ventilation ducting installed to ensure adequate air exchange. Sliding barrier extensions were also added.



CD classrooms and laboratories were carefully prepared for a safe return to face-to-face classes.

Laboratory classes used clinical patient simulators for teaching prosthodontics, periodontics, and restorative dentistry. After students and faculty members had their RT-PCR swab testing, limited face-to-face laboratory classes were started with physical distancing maintained.

Service to the community was not neglected with the free teleconsultation portal, the UP Dentista Para sa Bayan, manned by UP Dentistry Alumni Association members. Continuing educational webinars were also regularly held. The college also opened their auditorium as sleeping quarters for the security guards of UPM.

College of Nursing (CN). Nurses from CN comprise the strong and valuable force in this fight of UPM against Covid-19. In addition, CN supported the DOH's Epidemiology Bureau and the WHO Representative Office to the Philippines by developing training materials for contact tracing nationwide. The DOH's short video, "Philippines Fighting Covid-19: Contact Tracing in Communities," explained how contact tracing should be done in the community.

The college also held several free webinars related to Covid-19.

> *"The pandemic prompted us to transform classrooms and laboratories so we can conduct face to face classes safely."*
>
> **- Dr. Michael Tee**

College of Pharmacy (CP). Pharmacists served as drug information providers and counselors to physicians, medical providers, and patients during the pandemic through their "Ask Your Pharmacist!" online free consultation. This initiative was initiated by the Philippine Pharmacists Association, Inc. with some UP Manila alumni as volunteers.

CP held other activities as part of their Covid-19 efforts. Besides monitoring their students, they were active in volunteer work, donation drives, and information dissemination. Volunteering for BNOC was the common response across CP.

On donations, a fund drive for janitors and guards at CP was initiated by both faculty and administrative staff. They also donated PPEs for the PGH and NIH's use. The College of Pharmacy Alumni Association, Inc. and the UP Pharmacy Alumni Foundation also launched donation drives for BNOC to purchase supplies and PPEs. The alumni donated refrigerator thermometers to NIH to help them monitor the temperature of Covid-19 samples for laboratory testing. Student organizations, on the other hand, made Covid-19 infographics and shared these in their social networking sites.

College of Allied Medical Professions (CAMP). In addition to volunteering and raising funds, the CAMP produced educational materials specifically geared to stimulate the public to engage in physical activities. The lockdowns kept people indoors, and with the knowledge that physical activities could lessen loneliness and maintain good health, CAMP prepared enticing posters and videos of simple exercises and activities that could easily be followed and performed indoors. The "Let's get PTkal" was an online aerobic exercise class that was offered for free.

Health informational materials in English, Filipino, and six other Philippine languages were developed by CAMP interns. Speech pathology alumni and students launched *Usap Tayo!* which was a free online speech pathology consultations platform. In the latter, they were able to offer home programs and advice for patients with communication and swallowing problems.

School of Health Sciences (SHS). The SHS raised funds and provided meal packs to those manning the busiest quarantine checkpoints in Tacloban City and Palo, Leyte. Funds were also raised to help students who were stranded because of the lockdowns; and psychosocial support was extended to all their trainees. The school also participated in the Barangay Health Emergency Response Team's activities in Palo where the main campus is located.

CM's other Efforts. On the education front and in addition to the VLE platform of the university, CM utilized Panopto software (acquired by the college in October 2019) as additional tool in its shift to fulltime online classes. Alternative learning activities, reading assignments, non-graded self-assessments, video demonstration of clinical skills, and other forms of teaching were made accessible 24/7.

CM Assoc Dean for Academics Dr. Coralie Dimacali discusses learning/teaching strategies with local and international colleagues.

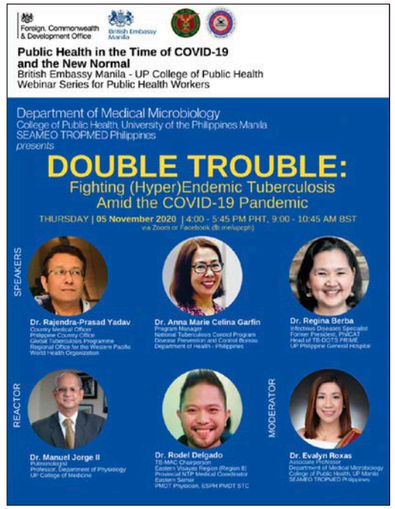
With the launching of the BNOC, 69 interns and many CM faculty volunteered and became part of the pool that manned the center. The UP Medical Foundation of the college, in partnership with the Ten Outstanding Women for the Nation's Service, Inc., raised more than P37 million for PPEs.

College of Public Health (CPH). CPH was another major player in the fight against Covid-19 in the country and in the region. It collaborated with other UP units, DOH, CHED, other state universities and colleges (SUCs), LGUs and national agencies, and the WHO in various projects and initiatives. In addition, since CPH is the Southeast Asian Ministers of Education Tropical Medicine and Public Health Network (SEAMEO TROPMED) Regional Center for Public Health, Hospital Administration, and Environmental and Occupational Health, it also cooperated with counterpart Southeast Asian institutions on similar initiatives.

The college provided the graduate training for public health of the DOH's Doctors to the Barrios physicians. It co-convened with the DOH the Public Health Communications Advocacy Network in promoting DOH programs against Covid-19. Together with the WHO Philippine Office and DOH Epidemiology Bureau, CPH provided technical assistance and contributed to the DOH surveillance and data analytics efforts. The college contributed research-based data and vital inputs that shaped the decisions and formulation of policies espoused by the DOH, IATF, Senate, LGUs, and CHED.

The college was instrumental in setting up community-based isolation units (CIUs) in selected LGUs and cooperated with some SUCs willing to offer their facilities, in setting up CIUs in their campuses. It assisted the CHED in developing guidelines for SUCs and offered assistance in their preparations for face-to-face classes.

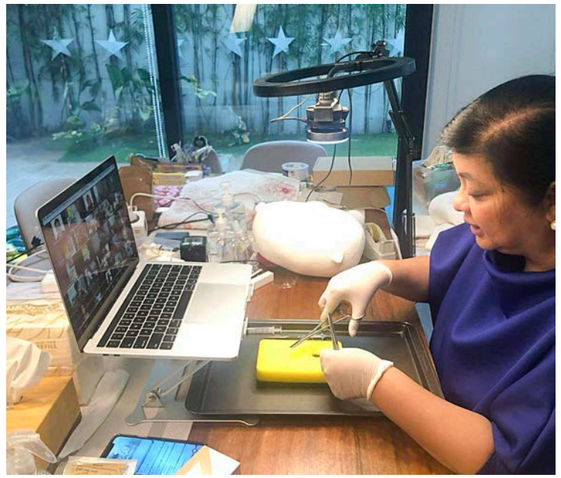
Furthermore, it connected with LGUs and the general public through webinars that tackled important pandemic-related issues; and as a result of its extensive research and experience on the ground, it came out with important policy statements on the Covid-19 response.



Showing just some of the many activities, programs, innovations, and projects of CPH during the pandemic

Highlighting Some Teaching Innovations During Covid-19

OB GYN 250 Virtual Learning Simulation Kit. Dr. Maria Julieta Germar of the Department of Obstetrics and Gynecology asked her group of students to make infographics on Covid-19 and pregnancy. Their output was posted on social media and picked up by clinicians from Palawan, Zamboanga, Ilocos, and even by a WHO specialist in Geneva.



Dr. Germar demonstrating the performance of clinical skills via Zoom to her students
(Lower picture) Students were sent kits containing these tools so they can practice doing the clinical skills at home.

When third year medical students were still not allowed to have encounters with patients in January 2021, Dr. Germar conceptualized the OB GYN 250 Virtual Learning Simulation Kit for students to learn the clinical skills of doing a pelvic exam and pap smear and an episiorrhaphy. Skills acquisition was accomplished by her doing online demonstrations for every skill; and annotating, explaining, and engaging with the students by groups. For doing the pelvic exam and pap smear, she sent her students by courier the following items in a box: disposable speculum, gloves, spatula, swab, glass slide, and molded clay (to feel like the cervix) mounted onto a toilet paper core. For the episiorrhaphy skill, the kit contained a yellow sponge on which they can practice suturing after marking the 'muscles of the perineum' on their sponges. Students then practiced doing these procedures at home using the materials while Dr. Germar motivated, guided, and assessed them online. The students greatly appreciated these great efforts on Dr. Germar's part that allowed them to have "hands-on" training experiences.

When non-Covid-19 patients were finally allowed inside the hospital, a strategy for students to have interaction with actual patients was developed. Via Zoom, the student with a preceptor present interviews the patient and discusses the case with the preceptor (after the patient leaves Zoom). Finally, by 2022, birth simulation using a high-fidelity simulator was utilized in the teaching and learning of students in the field of obstetrics.

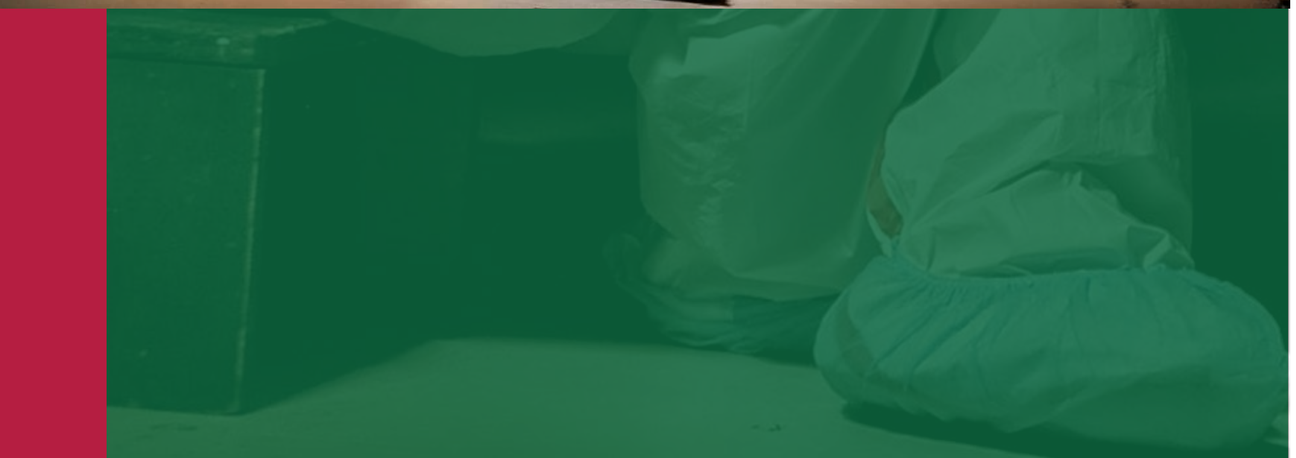
Learning and Practising Clinical Skills through Virtual Platforms. Training in CAMP relies heavily on regular interactions with patients. The trainees therefore had to embrace new ways of learning their craft during the pandemic. Dean Aguila directed her faculty to devise innovative ways of teaching and learning. Students adapted by learning and practicing clinical skills through virtual platforms, complemented by structured in-person sessions with simulated patients.

In this set up, the students received guidance from their faculty mentors and learned collaboratively by observing their peers, while adhering to strict health and safety protocols. These innovative learning strategies, initially unfamiliar to all, soon became the go-to methods not only for faculty mentors to teach students, but also for students to teach caregivers essential therapeutic activities that could be performed at home. Faculty guided the interns, who then guided caregivers remotely, contributing to continuity of care for persons with disabilities despite pandemic-related restrictions.

Making Learning Engaging and Enjoyable. Second year medical students when they rotate in Pediatric Cardiology are taught how to auscultate the chest and listen to the heart sounds. Traditionally, pediatric patients with heart diseases are examined by groups of students with a preceptor to guide them.

During the pandemic, after the online lectures, small group 'demonstrations' with consultant preceptors were accomplished via Zoom wherein the students pasted their drawing of a child onto stuff toys or pillows. They then demonstrated where the heart sounds are heard and what sounds they would have heard. Also during these sessions, a recording of normal and abnormal heart sounds was played, and this was followed by further discussions.

This way, learning was not just by reading or listening to lectures but actively engaging with students and making the process more enjoyable!



CHAPTER 5

There Are Stories to Tell

UP Manila's response to the Covid-19 pandemic was a massive collective effort that drew on the institutions' resources and resolve to succeed, stretching the organizational limits of the possible. The lines of command, of administration, and of implementation had to be very clearly drawn and dutifully observed to ensure that protocols were followed, and tasks were done both to contain the virus and secure the safety of frontliners. That experience will be etched into the history of the University of the Philippines as sharply as its valiant efforts during the Second World War to render service against all odds.

But behind the walls and the corridors through which many a doctor, nurse, and patient passed were personal stories of courage, sacrifice, love, and loss—stories that need to be told and shared to give a human face to the pandemic's heroes, victims, and witnesses. The catalogue of these stories may never be complete, but these recounted below should offer a harrowing and yet also heartwarming picture of the price of heroism.

On the Frontlines

By Dr. Jose Jonas Del Rosario, Spokesperson, PGH

On my 55th birthday, I began to be deeply involved in the PGH Covid-19 operations as part of its Crisis Committee. As PGH spokesperson, I was in charge of discussing current events and advisories in the media, at the time when PGH was becoming the benchmark for hospitals on how to manage the crisis.

I read scientific journals, attended webinars, and consulted experts to better understand the issues related to Covid-19. I helped accept donations, promote the convalescent plasma program, reached out to quarantine centers, and gather inspirational stories from survivors and healthcare administrators.

Occasionally, I donned my level 4 PPE to perform lifesaving cardiac interventions in the catheterization laboratory of the hospital on Covid-19 positive kids with heart diseases. I viewed Covid-19 as a job assignment.

In the blink of an eye, Covid-19 became personal. My greatest fear was realized when both my parents were admitted to PGH almost at the same time because of severe pneumonia. I can still see the worried looks on their faces when I told them they needed to be hospitalized.

My dad celebrated his 90th birthday, the oldest patient of PGH at that time, hooked to a high-flow oxygen machine; as my mom was being wheeled to the ICU for intubation due to impending respiratory failure. For nearly two weeks, I visited them in my level 4 PPE, checked on their progress, and talked to their doctors and nurses.

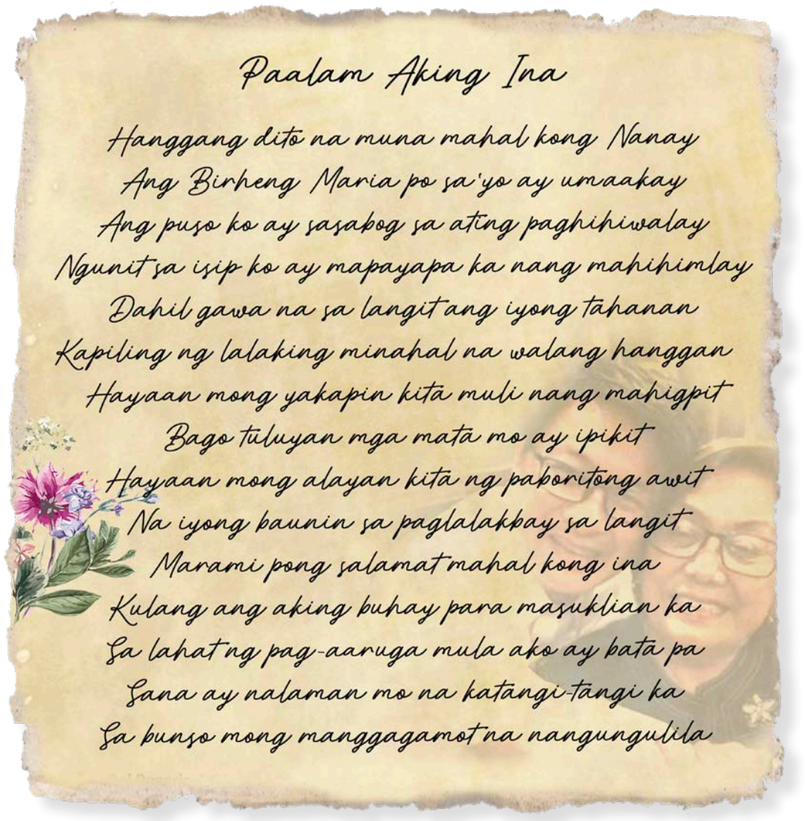
I cherished the moments when I was allowed to be with them. As my mom was mostly sedated in the ICU, I spent a longer time with my dad. I'd bring him food, chat with him, and put him to bed at night. I wanted to make both of them feel that everything would be all right, that I was with them every step of the way. I knew the odds were stacked against them but I was hopeful of a good outcome since they were in good hands.

Unfortunately, on my son Jared's birthday, I also had to be admitted for Covid-19 pneumonia. I had fever, chills, headache, and difficulty of breathing. I experienced how it was to be a Covid-19 patient with all its physical and emotional challenges. I was told to focus on getting well and not to worry about my parents who were relatively stable at that time. My hospitalization prevented me from visiting them, which I found most distressing as the opportunity to hold them tight was no longer possible.

Nothing had prepared me for both of my parents succumbing to the disease one after the other. They suffered a lot from Covid-19 and I was not with them at their bedside in their final moments. It was by far the most painful experience I have gone through.

My Covid-19 experience taught me valuable lessons as I went through my journey as a doctor, patient, and loved one. I understood more deeply how it was to be a doctor or nurse at bedside in uncomfortable PPEs, to be a patient fighting for dear life, and to be a family member losing a loved one to this unrelenting virus. The experience has made me a more compassionate and credible PGH spokesperson.

In our last conversation, my dad told me: "More than material things, personal family relations are what matter the most." I am glad I've been given a second chance in life to make up for lost time with my family. My pious mom who died on the birthday of the Blessed Virgin Mary wrote her final reminder to me before she went into a coma, *"Magdasal ka."* In my moments of despair and sorrow, it was the power of prayer that allowed me to let go and let God take control. I am a recipient of His Amazing Grace through the kindness of countless people who prayed and took care of me so that I may survive and continue my mission in life. (Published in the book, *Pearl*, 2022)



A recovered Covid-19 patient happily donates his plasma to the delight of scientist-researchers of the Convalescent Plasma Trial.

When the Doctor is the Covid-19 Patient

By Dr. Mark Anthony Sandoval, Endocrinologist, PGH

The doctor takes charge of his patient; but what if the doctor becomes the patient? Two cardiologists, Dr. Rody Sy and Dr. Nelson Abelardo, who both contracted Covid-19, shared their heartwarming journey during the Grand Rounds of the UP-PGH Department of Medicine last May 19, 2020.

Dr. Rody Sy gave a scholarly presentation of his experience beginning with his medical profile, symptoms, and hospital course complete with laboratory test results like chest x-ray and CT scan (showing the trainees what an excellent presentation was, himself being a professor emeritus and National Academy of Science and Technology academician).

His doctors "threw the book at him"—meaning, he received all forms of treatment such as antivirals, antibiotics, immunomodulators, multivitamins, prone positioning, high flow oxygen, and even Chinese medicines (from his relatives). Airlifting him abroad was even considered so he could get the experimental drug Remdesivir!

The long wait for RT-PCR result was agonizing even if he expected the positive result. His was a harrowing and frightening experience—he was lonely, isolated, and had to do everything by himself like pulling his intravenous fluid stand for hourly visits to the toilet because of diarrhea and frequent urination. He remembered how painful the needle punctures were as he had them several times a day. He was afraid of being intubated because of his shortness of breath and low oxygen levels. Learning of several colleagues' deaths during his most critical period made him think of the worst.

But all these caused a spiritual revival for Dr. Sy. Later, he had daily devotional prayers with his nurse who happened to be a Protestant like him. He prayed to God for mercy and felt stronger knowing so many people were praying for him. He soon realized it was because of God's grace that he survived! God had a mission for him in his remaining years.

"Like a small boat sending big waves into motion" is how he pictured himself. And his advice to colleagues? Be compassionate and engage clearly and truthfully with your patients and their family. He ended his talk by saying, "I still have a lot of fight left in me!"

Dr. Nelson Abelardo was very candid about how he felt before contracting Covid-19. He had a comfortable life, was in tip-top shape, and felt invincible. He had that certain *yabang* which is not necessarily arrogance but having that sense of control over his life.

But alas, his life was shattered when he and his wife had fever and diarrhea and were admitted. Covid-19 sent shivers to the deepest recesses of his body. "I was staring death in the eye," he recounted. To him, the thought of dying spiritually unprepared was terrifying. During the wait for the RT-PCR result, anxiety was killing him faster than Covid-19. He had shortness of breath, nausea, bloating, and diarrhea; food was unpalatable and unattractive. He felt absolutely helpless knowing his wife was just in the next room. Solitude and fear broke him to pieces. He now knew how it felt to be a patient.

"Health is real wealth, do not take it for granted," was his advice. Fame, fortune, social status, and power are nothing. What really matters is your relationship with God, the only One who truly saves and can make you whole.

Both cardiologists expressed their gratitude to their doctors and those who took care, helped, and prayed for them.

Some Heroes Wear Tattered Capes: A Cancer Patient and Covid-19

By Dr. Rogelio Velasco, Oncologist, PGH

Inside my humble clinic, the two walls and beige curtain bore witness to countless anecdotes.

JM seemed well, save for a left breast mass with roughly the size of an orange and roughly six months in duration. Like most first-time patients, her face was painted with overwhelming fear, anxiety, and hesitation. I interviewed her and performed a routine palpation of the mass. It was firm and almost felt malevolent. I then instructed her to undergo some laboratory exams and referred her to a program for care of charity breast cancer patients. This program offered breast cancer patients like JM a fighting chance for cure through assistance with chemotherapy. I gave her my cellphone number in case she had any concerns during the course of treatment.

As an oncologist, I often find myself standing between the big C and the patients. After a few cycles of treatment, I noticed a dramatic shrinkage of her breast mass. Gradually, the fearful and anxious JM during our first encounter transformed into a more hopeful and motivated cancer warrior.

Everything went on smoothly until that unprecedented day a Luzon-wide lockdown was declared. The world stopped and cancer treatments were indefinitely delayed. Unfortunately, for cancer patients like JM, their tumor cells continued their merciless uncontrolled growth in the absence of regular chemotherapy.

Covid-19 was one of the biggest and most challenging health battles of the world in recent history. The virus paralyzed thousands of people with lasting effects on health, finances, livelihood, among others. Cancer patients were at a particularly

high risk of contracting the virus due to their immunocompromised state. JM was one of the millions of Filipinos plagued by this virus.

"Doc, ang last chemo ko po ay May 4. Makakapag-schedule pa ba ako ng susunod na chemo?"

Her only child had Atrial Septal Defect (a congenital heart problem), was undergoing rehabilitation because of developmental delay, and on top of all these, she was battling breast cancer.

"Doc, salamat. Dahil sa iyo, nagawa ko magpa-chemo at nagkaroon ako ng lakas ng loob."

Instead of smiles and cheers on the faces of HCWs on the frontline, N95 masks and face shields concealed their sweat and tears while hazmats hid their weary souls.

On the other side, JM and the rest of the backliners faced their own unsung battles every single day. Due to the lockdown, JM temporarily halted selling local *kakanin* which used to augment her meager income. Her cancer treatment was not only plagued by the virus—it was also threatened by the lack of transportation, impending unemployment, and undue treatment delays.

Not all heroes wear vibrant red capes. Some heroes wear tattered capes of strength, resilience, and hope. And not all heroes fight to save the whole of humanity, some backliners fight for their cancer, for tomorrow, for their only child.

The SANIPOD Saga

By Dr. Edward Wang
UP SIBOL's Program Leader during the pandemic

Our frontliners are getting hammered by the coronavirus. Every day, a frontliner falls by the wayside—friends, classmates, teachers, colleagues. We need to help—we can't just sit back and watch!

I have just finished attending prayers for an anesthesiologist classmate who succumbed to Covid-19.

Let's convene SIBOL, the newly minted Surgical Innovation and Biotechnology Laboratory Program of the UP Manila-College of Medicine. The MOA between DOST-PCHRD and UPM was just about to be signed when Covid-19 struck. How can we do it? We have no infrastructure, we have no equipment, we have no money… but we have the people, we have the brains from UPM and UPD collaborating in this program AND we have Viber and we have Zoom!

Daming plano, where do we get the support, where do we get the money? By the next week, *si Jimmy na ang nangungulit: magmeeting na tayo, ano na update sa projects;* PCHRD is willing to fund them! By the third week, Chancellor Menchit was reminding us: remember we have bridging funds. By the fourth week, my Xavier Class '75 classmates had gotten wind of the story and were contributing to our initial funds.

How do we keep the frontliners from getting infected in a Covid-19-heavy environment? Disinfection—we clean them of the virus! Misting—that's right! Misting tents are all over the news, showering people, cars, equipment with alcohol, Clorox, or other disinfectant solution. This is work for a team of engineers, scientists, and clinicians. Ed Magdaluyo, whom we had worked with before, brought in his team from the Department of MMME of the College of Engineering, UPD. Ed and Jason Pechardo drew up the initial design: frame with misting nozzles, acrylic walls, plastic curtains for ingress and egress.

That night during dinner, I described a chamber for spraying a HCW with alcohol for added disinfection. My daughter said, "hold on, alcohol is combustible, *hindi yata pwede iyan.*" OMG, that's right! You'll have a fire chamber! We can't use alcohol… what about Clorox, aren't they spraying it in the streets of Europe and China? But that's bleach, sodium hypochlorite and that's toxic to humans! Oh no, so what can we use? Can we call in the biologists? We invited Prof Joyce Ibana of the Institute of Biology, UPD and the biosafety people, Prof. Flerida Cariño and Prof. Eiza Yu-Roberto from the Institute of Chemistry, UPD.

We figured that a certain product was perhaps one of the best options for the misting. We remembered that professors had lectures. The feeling while investigating this possibility was like attending chemistry lessons in UP Diliman. It was as if we went through an "Advanced Chemistry" subject. The concentration had to be calculated. And after conducting a literature search, it was determined that a certain concentration of this product's solution was enough to fight the virus and bacteria while it was safe for humans.

Okay, does the HCW walk through the chamber? *May kurtina ba iyan, parang car wash?* Wait, let's stop calling it a chamber. *May magandang pangalan: SaniPod.* Sounds very good! SaniTent—*pang maraming tao, kaya SaniPod.* Does the HCW just push away the curtains to walk in and out? *Di ma-cocontaminate ang curtains! Dapat no touch, automatic slide doors…no, medyo mahal and maraming areas na hindi ma-disinfect. Automatic swing doors na lang.*

So, the HCW walks into SaniPod and gets misted. *Basang basa na si HCW.* Dr. Cathy Co tried out the frame …. *"Medyo nabasa, Sir." Wait, dapat may drain. Iyong isang donation sa PGH ng famous personality, nag-flood daw ang garden. I think we can adjust the nozzles so that mist lang talaga. That shouldn't cause an overflow. Sige, we'll put in a drain just the same.*

We have an air shower we can use; there's a condemned air shower at Engineering. Wait, if air shower and misting, that means the chamber can get contaminated also…. We need UV irradiation but only when the HCW is out. We can add timers. Good idea. Ooops, hold on team, DOH has a circular that misting is disallowed! Oh, no… but wait, *nakasulat* it can be done only if the HCW is in full PPE. That's exactly what we want: misting before doffing to decrease the contamination to frontliner, to safety officer, to workers who remove disposed PPEs, and to the environment.

Almost complete…How do we know it is effective? *Anong evidence natin? Hanap uli sa literature. Sabi* it can be tested with what we call a pathogen challenge! Yikes, how do you do that? With a virus? Where do you get the virus? Is it safe? *Sabi sa literature,* it doesn't have to be a virus. *Pwedeng surrogate bacteria* because actually it is more difficult to kill bacteria.

Microbio sa UPM! Kilala niyo ba? Pwede raw sila Dra. Maita Lota and her team. Next question, how do we transport the SaniPod to UPM. *Meron ba tayong mahiram na boom truck?* And once you bring to UPM, where do we put the SaniPod? *Payag na si Dean Jun Bellizario,* but how do you bring the Pod up the steps of CPH? *Hindi pwedeng i-park sa lobby! Nasa third floor ang lab ng Microbio pero hindi kasya si SaniPod sa elevator.*

Ma'am Maita, where can we put it? *Tapos kailangan ng three-phase circuit connection.* Engr. Remorque and Maam Rosalie of CPDMO personally checked the electrical outlets at the CPH and assured us that plugging in the SaniPod would not blow up UPM on the Pedro Gil side.

Tamang tama, diyan sa parking lot, close to the back entrance of CPH. Tapos may tent pa. Big event, the engineers hired a truck and hauled the entire Pod from UPD to UPM, less than one hour, no traffic. Finally, a place to do the pathogen challenge, easily accessible to the microbiology team, *hindi istorbo sa lobby, intact pa elevator ng CPH.* Okay, who's volunteering to wear PPE and have the bacterial discs stuck on them to test? *Daming nagvo-volunteer!* The spirit of volunteerism was suddenly dampened: *Ooops, bawal iyan*—danger to researchers; no one can volunteer for that!

According to UPM Biosafety Officer Dra. Rohani Cena, no choice, we need to put an inaminate object inside. Huh? A mannequin? Where will we get a mannequin? Philippine Textile Research Institute Dir. Celia Elumbra is volunteering her mannequins. TTBDO Director Mitchay Pacia has gotten in touch with SM. SM Cubao is donating 2 of their mannequins today.

Yay, we got the mannequins. *Oh no, masyadong matangkad, hindi papasok sa SaniPod natin. Hatiin si female mannequin parang mananganggal.* Ortho residents Jom Dychioco and Anya Pena and Tumor Fellow Emil Dacanay to the rescue. First case! They split the mannequin transversely then reconstructed her in under an hour ably assisted by Nurse Jenna Gonzalez.

The mannequin will be clothed in full PPE with coverall, face shield, cap, gloves, booties. We stick the pathogen discs onto strategic areas of the PPE on the mannequin, subject the mannequin to misting, remove the discs and culture them in the Microbiology laboratory to evaluate how effective the misting was! *Simple! Pa-sterilize na gamit sa OR,* including PPE and the microbiologists' discs and plates.

Hold on! How do you make the mannequin turn around just like a HCW turning around in the SaniPod while undergoing misting? We need to put 'Quin' on a stand and let her turn around. *Pero walang automatic turning... gawa tayo ng paraan… a stand fashioned on rollers (from Bambang)) with a piece of string wrapped around the stand na pwedeng hilahin parang trumpo.* Let's try it—it works!

Came day of testing. The team was there. Quin has been dressed up properly covered head to toe. *Ingat, baka ma-contaminate si Quin when putting her in the Pod. Ok nasa loob na. Start the SaniPod! Nag-malfunction ang Pod!!! Hindi matutuloy ang testing! Hanap ng engineer! Engineer Lorenzo: OK let's try turning it on and off. Ayan, parang okay na. Let's do it. Ok go. Misting na. Na-stuck up ang trumpo, ayaw umikot si Quin! Sir ubos na discs namin, wala na kaming discs to repeat the test, let's check out first the discs that were subjected to the misting now. Kahit hindi nagturn, at least one side was completely misted. Engineers Ed and Jason came over to fix the Pod on the weekend – ok na. Try again the following week!*

Monday na – walang masakyan ang staff ng Microbio, nagkaproblema ang shuttle na magpi-pick up sa kanila! Panic!! Walang Grab ngayon. Hanap ng Grab na walang trabaho. Meron na, 1,500 per day, okay na iyan. Sir sorry pero nag-break down any ethylene oxide sterilizer ng PGH. Hindi ma-sterilize ang plates ni Microbio! Sa Madocs, sabihin emergency! Hay salamat, pumayag, thank you!

Another testing day, dumating entire team, engineers, clinicians, microbiologists. Today, everything worked! Tomorrow we have the second pathogen. Ok na ulit, it worked! And both pathogen challenges gave outstanding results! Kaunting adjustments na lang, pwede na ma-deploy!

According to HICU, it looks like there is an increase in infections among HCWs. Let's make sure we help them during doffing. That's the single role of the UP SIBOL-Covid-19 Task Force, that's the goal of the SaniPod!

From Field Healthcare Workers

Resilience in the Time of Pandemic: Experiences of NBS Implementers

By Ms. Vina Mendoza, Project Development Officer V, Newborn Screening Reference Center, NIH

The Covid-19 pandemic greatly affected the delivery of newborn screening services throughout the country. The lockdowns in many areas, suspension of transportation services including air travels, non-operation of major couriers, and closure of borders in some provinces posed challenges to the program. Delays in the transmittal of newborn screening samples, a significant decrease in the newborn screening sample receipts, overwhelming number of late samples, delay or cancellation of confirmatory testing, and suspended follow-up visits of patients were encountered by the program implementers.

Managing the operations at different levels was a tough task. To weather the storm, newborn screening program leaders quickly stepped up to respond and coordinated mitigation plans effectively and efficiently. Throughout the pandemic, all newborn screening centers (NSCs), regional newborn screening teams of the Department of Health - Centers for Health Development (CHD), newborn screening continuity clinics (NBSCC), and newborn screening facilities in the country remained operational and employed various strategies. They were continuously giving quality newborn screening services while observing standard protocols.

Newborn Screening Center-Mindanao. The NSC Mindanao and the CHD teams organized a system to help bridge the gaps and establish alternative plans to keep the program afloat in Mindanao.

The CHD Zamboanga formed a special task force on newborn screening. It also coordinated with the Office of City Mayor Isabelle Climaco-Salazar for the weekly transport of samples to the NSC. The Edwin Andrews Air Base and the Philippine Airforce Western Command made possible the airlifting of samples, medical milk supplies, and pertinent documents to and from Region 9 via military aircraft.

Meanwhile, the CHD Northern Mindanao together with city health offices and selected facilities served as drop-off and pickup locations within the region. With lockdown protocols, the CHD and NSC Mindanao teams met at the border checkpoints of Davao City to turn over specimens and documents once a week. In three months' time, Region 10 was able to deliver a total of 12,417 samples.

Many health facilities within Davao City hand-carried samples to the NSC. The CHD 11 NBS team assisted these facilities using its service vehicles. A temporary delivery system was also established through the assistance of the different provincial DOH Offices. The Sta. Rita Maternity Clinic, Isaac Robillo Memorial Hospital, Dr. Lorenzo Principe Clinic, and Malita District Hospital also volunteered as drop-off facilities.

Since vehicles were not allowed to enter Davao City, the NSC-Mindanao requested the Viacrucis Medical Hospital to serve as the drop-off point for Sultan Kudarat Provincial Hospital's samples. The assigned staff from both facilities met at the border of Davao del Sur and North Cotabato Province.

DOH vehicles and provincial ambulances were used to enter the border from the south. Along with the provincial hospitals in Sultan Kudarat and North and South Cotabato, they formed the backbone of the ENBS task force in the SOCCKSARGEN region.

The DOH CHD Caraga used the provincial DOH offices as drop-off and pickup locations. The NBS team of CHD Caraga and NSC-Mindanao met at the northern border checkpoints of Davao City once a week.

The Maguindanao and Lanao del Sur areas of the Bangsamoro Autonomous Region in Muslim Mindanao were serviced by the CHD 9 and 12, respectively. The DOH-CHD 9 also transported samples of health facilities from Basilan and Tawi-Tawi. With the help of the Integrated Provincial Health Office Sulu, samples from Sulu were transported directly to Davao City courtesy of the Philippine Airforce Tactical Squadron Operations of Jolo, Sulu.

DOH Center for Health Development-Bicol. A series of consultations was held with several stakeholders, i.e. provincial health offices, city coordinators, health facilities, external partners, Covid-19 team, and other internal stakeholders to discuss strategies to ensure the Business Continuity Plan (BCP) for the ENBS.

The CHD 5 immediately transitioned from conventional in-person activities to online orientations, meetings, trainings, advocacy activities, webinars, and other forms of technical assistance.

On the logistics side, the CHD 5 created and operationalized the timely receipt and sending of ENBS and confirmatory samples from health facilities to the Institute of Human Genetics of the UP Manila NIH in Quezon City. It facilitated the delivery of kits from the NSC to the health facilities and the delivery of essential medical supplies, food, and supplements to patients, among others.

Pira Hospital Cabugao, Ilocos Sur. Difficulties emerged regarding the transport of specimens and obtaining filter kits on time from the NSC Northern Luzon in Mariano Memorial Hospital and Medical Center, Batac, Ilocos Norte, which was situated in another province.

Bless Macugay, chief medical technologist of Pira Hospital, went to the border and handed over properly sealed specimens to the one manning the border from NSC. In turn, that personnel brought the specimens for testing at the NSC. The Pira Hospital used the acronym Covid-19 to characterize the goals of the program: C for communication, O for obedience, V for vigilance, I for innovation and creativity, and D for diligence in performing timely screening.

Newborn Screening Continuity Clinic-Cebu. Faced with challenges during the Covid-19 pandemic—which included the difficulty in recalling patients; noncompliance with follow-up, treatment, and laboratory monitoring; travel restrictions; and low supply of medicines and medical food—the NBSCC in Cebu immediately transitioned to telemedicine and activated networks of referral in the region for patient monitoring.

It used text messaging, phone calls, and video calls through different online applications for remote patient monitoring and clinical validation together with sub-specialists (pediatric endocrinologists and metabolic specialists) and dietitian-nutritionists. It also referred patients to the DOH-CHD, RHUs, or satellite clinics in some provinces either for follow-ups or home visits.

Supply and logistics for medicines and medical food for patients were coordinated with the Institute of Human Genetics (IHG)- UP Manila, DOH-CHD 7, Office of the Civil Defense, Philippine National Police, and Philippine Air Force.

Barangay Health Workers

Barangay Health Workers or BHWs also shared their experiences and with the research staff of RESPOND Philippines or Responsive and Equitable Health Systems-Partnership on Non-communicable Diseases, a program implemented by UP Manila and the London School of Hygiene and Tropical Medicine.

Victoria Mendenilla, a BHW for 24 years in Bagong Silang, Perez, Quezon, recounted the day an emergency meeting was called in March as the start of more challenging work for her and colleagues. Having a hypertensive husband made it more difficult to balance her responsibilities.

"Inabot kami ng ala-siyete ng gabi sa meeting. Naabutan ko ang asawa kong tulala, dinobledoble ang inom ng gamot." To ensure this would not happen again, she checked her husband's blood pressure and prepared his medicine before reporting for work. Before the pandemic, BHWs in Perez were working two to three days a week. Now, they attended to their duties almost every day to take care of persons under monitoring (PUMs).

Given that Perez was a low-income island community, access to health services even before the pandemic was already a challenge; and Covid-19 placed a huge stress on their already strained resources, especially when needed medical services could not be provided. They had to endure hours of travel to get to the nearest hospital in mainland Quezon Province.

A BHW for nine years in Perez, Quezon, Minda Alpuerto was afraid of contracting the disease, especially for those who lived on their island. Aside from being expensive, getting to the nearest hospital with adequate facilities would entail hours of travelling.

Six months after the March lockdown, Minda's fear became real. A niece who lived next door was traced to have interacted with an infected person from a neighboring community. Minda and her family were put on a mandatory 14-day home quarantine as PUMs.

With her family relying only on fishing aside from her P1,200 monthly honorarium as a BHW, Minda's husband was forced to fish daily during their quarantine period even if he was untested. *"Wala pong choice. Wala kaming kakainin. Mamamatay kami sa gutom."* Sewing and repairing clothes helped her earn extra income. But one thing was clear: for a family without a stable source of income, starving to death was more dreadful than contracting the virus.

After completing home quarantine, Minda was happy to be back at her BHW duties. But only a month after, her daughter working as a babysitter tested positive for Covid-19, having contracted the disease from her employer who worked at the municipal office. After testing positive, they had to go into quarantine again. Minda realized how hard it was to be isolated without any assurance of surviving the deadly virus, while anxious about how to provide for her family's needs.

From Volunteers

Voluntarism Amid the Covid-19 Crisis

By Dr. Leilani Nicodemus, Head, Volunteer Engagement, BNOC

"Volunteers do not necessarily have the time; they just have the heart."
- Elizabeth Andrew

Volunteers are usually ready for all kinds of tasks and risks involved in whatever they sign up for, but the Covid-19 crisis created new challenges. The risks escalated depending on many factors, starting with the basic issue of personal protective equipment. Despite these uncertainties, brave souls still chose to dedicate their precious talent, time, and effort to help in whatever way they could to fight this menace.

Volunteers for the BNOC came in different ages, shapes, and sizes. Some were willing to help physically in ensuring that enough supplies and equipment were available for the smooth operations of the call center. Others, because of physical limitations, extended their support remotely and help in addressing patient queries and improving education. Even with these limitations, their willingness significantly boosted the morale of everyone and contributed to the collective effort.

In Filipino, there is a word that is used to express the community spirit aimed at helping neighbors in need: *bayanihan*. This is what the Covid-19 crisis has brought out among the UP Manila constituents, a trait that is inherent in us and just waiting for the perfect opportunity to manifest itself in more palpable ways. Voluntarism expanded and "infected" even those outside this well-knit academic community.

Setting up a volunteer group is fraught with difficulty in getting financial and logistical support, but the BNOC was met with overwhelming excitement from all sectors and contributions poured in. Indeed, the Covid-19 pandemic sparked the flame of voluntarism. UP Manila's brand of voluntarism shone brightly and continued to spread. *BAYANIHAN NA!*

Chancellor Padilla together with the very first medical interns who signed up as volunteers for the BNOC

A View from the Back End

By Mishima Miciano, CAS with Prof. Joy Memorando, UPCD

As the "back end" to the frontlines, the BNOC worked as a call center where donations and patient queries were handled. It was set up with amazing speed and operated through the efforts of volunteers: medical interns, faculty, students, and even alumni. Volunteer preparation was just as fast. I signed up a day after attending an orientation by Chancellor Padilla via Zoom. By March 31, the second day of operations and after training for less than an hour, I was seated and nervously awaiting my first caller.

It was a new experience for all of us, to call ourselves "agents" instead of "teachers" or "students." We thought, so this is what it's like to work at a call center! While up and running, operations were continually evolving as problems came up. On my first day, I learned that a new online data form would replace a one-day old form to deal with what was then a huge "problem"—the flood of food donations. In the following weeks, new scripts had to be added for new concerns.

Amazingly, donors came up with nearly impossible finds: PPEs, N-95 respirators, and so many gallons of alcohol made their way to Alvior Hall. There were other things like mattresses and even a month's supply of pet food—for the frontliners' furry friends, the donor insisted. These came from all sorts of people, from all walks of life: big and small businesses, fraternities, universities, NGOs, professional associations, school batches, students, private individuals both local and overseas, politicians, *barkadas*, and even from one "Anonymous Friend of PGH."

Much more interesting were stories sneaked in by some callers: bureaucratic hurdles to get PPEs from Taiwan; a small group of friends pooling their funds; and patients of kind PGH doctors wanting to give back. A lady wanted to donate her late father's hospital bed. There were words of encouragement coming in from everywhere. Notes saying, "Thank you frontliners! God bless and keep safe!" Bible verses were stuck on sandwich wrappers, food boxes, and face shields—each one a handcrafted prayer and a gesture of goodwill.

Taken together, different people, different means, and different strengths; these vignettes composed a picture of the *bayanihan* spirit that gave the call center its name. From the frontlines to the back end, we all moved forward, carrying our one great burden.

From a Doctor-in-Charge

Dr. Diana Lachica, Head, Patient Query Arm, BNOC

At the time when Covid-19 hit, I was still breastfeeding my youngest daughter which meant that I didn't go to the hospital for duties. As part of the ExeCom of the

PGH Department of Medicine, we had frequent online meetings to quickly transition our usual operations to ensure that our admitted patients get the best treatment and that our hospital staff (especially our trainees) were protected and supported.

It was in one of the meetings that I distinctly remember thinking about our patients who would go to the OPD—those brave enough to go to PGH—only to be informed by a piece of paper on the gate that says the clinics are closed; and I can just feel the helplessness and anxiety they must have experienced on their long trek back to their homes. Only a few of our patients who had been in our continuity clinics responded to their residents-in-charge when they tried to reach out. It was also not possible to call or send messages to the hundreds of patients we serve in the OPD daily as we didn't have all their contact details with us. The idea of a unified and easy to remember number for PGH—a means for patients to reach us directly with their concerns and not through the trunkline (which would be used for hospital operations—came to mind. So it was such a relief that when I asked my sister who was working for PLDT for help, PLDT had already begun talks with UP President Danny Concepcion and UPM Chancellor Menchit Padilla for a hotline. And the rest is history.

When I look back at this experience, I am amazed at how all of the things for the hotline came together seamlessly, totally unexpected for me! This exemplary execution came to fruition because of these ingredients: excellent leadership by Chancy Menchit (aka call center guru), short but meticulous planning (which meant nightly Zoom meetings), dedicated core team (my boss Ma'am Mia Tabuñar, the other boss Sir Tony Perez, Joanna Torralba and Ma'am Lanie Nicodemus for volunteer support, and our externals lead Sir Ants Cordero), über reliable and hard-working Patient Query coordinators (Karl Sy Su, Eric Yasay, Raymond Oliva, Vanessa Co-Tanco, Catherine Reyes, and Yin Quintin-Gutierrez), energetic and tech-savvy student volunteers (Michelle Eala, Nicholas Tan, Ino Villacastin, Arvin Tan, and CK Yao), talents of a "professional-sounding" voice for the automated hotline audio instructions (aka my oldest daughter Sophia Angela Lachica), collaborations that 'clicked' (both unexpected and sought out: Unexus, Sir Mahar Lagmay of the UP Resilience Institute, Philipppine Red Cross, UP Law), and a UP PGH community with the passion to serve. Because the preparations were rushed, we knew that we needed to be able to identify our shortcomings and respond to feedback quickly and efficiently along the way. It meant a lot that everyone was dedicated and very willing to make sure that operations go smoothly. Thinking about it now, maybe this was because everyone who was a part of the hotline felt and shared ownership of 155-200. It was nobody's project but everybody's!

Volunteering for the hotline meant we weren't supposed to get anything in return for the work we did. But I think we all got something from it, one way or another–a chance to help, a way to practice despite the restrictions, a platform to get the most updated information about the pandemic, a new skill, new friends, ideas to carry beyond the crisis, shared experiences, enduring relationships, and beautiful and not-so-beautiful memories that will last us a lifetime.

Light Moments

It was not all gloom in the campus despite the gravity of the situation. In fact, there were many successes and joyful moments. Here is a glimpse of what some of those moments were:

Dr. Gerardo Legaspi: Ice cream and PGH t-shirts

It was a time when, to have those feel-good moments, a PGH tradition was born. People considered March 30 a special day (which incidentally is also near the birthday of Director Legaspi); and on this day, ice cream carts can be seen all over the hospital for everybody to partake of free "dirty ice cream"! Starting at around 1:30 pm, the ice cream carts started dispensing the delicious fare to staff members from both the morning and afternoon shifts. T-shirts were also designed with a star on top to signify that PGH was the north star for the Covid-19 times.

March 30 is now "PGH Covid-19 Response Anniversary," with 2025 commemorating the fifth year of its Day 1 as a Covid-19 referral hospital and the Bayanihan Na! Operations Center launching day.

Dr. Apolinario Ericson Berberabe: Restaurant meetings at Café Meemaa

Sometimes, the Crisis Team held meetings at Café Meema (owned by Dr. Berberabe) where they had the place all to themselves because the restaurant was still closed to the public. Since the restaurant staff were unable to go home and literally lived in this place, they could gather in this place as an alternative to their usual meeting locations and unwind. The calming ambiance was very suitable and gave them a much-needed break from those stressful days.

Dr. Rodney Dofitas: Meal times

The staff were always serious at work, but at least mealtimes were a different story. When the staff learned that they were safe, the relief could be seen on their faces during meals. People in those days ate in hallways, and the different mealtime schedules with distancing gave off that classroom vibes. Dr. Dofitas fondly looked back at those times when they used chairs from colleges and felt like they were in classrooms.

Dr. Regina Berba: Plenty of food and footwear

When donations poured in, there were scrub suits that arrived. There were also pairs and pairs of rubber shoes. Bata rubber shoes came by the thousands! And when Crocs footwear came in, everyone was wearing them for a time.

What were constantly donated were all kinds of food. There was plenty of food, and lots of ice cream!

CHAPTER 6

The Light at the End of the Tunnel

On July 21, 2023, President Ferdinand R. Marcos, Jr. issued Proclamation No. 297 officially lifting the State of Public Health Emergency throughout the Philippines due to Covid-19. While sporadic cases of Covid-19 would continue to emerge as the virus mutated into new but thankfully more moderate strains, the worst of the pandemic was over. This followed a similar statement by the WHO on May 5, declaring the end of Covid-19 as a global public health emergency. By that date, the WHO estimated that the virus had infected more than 765 million people worldwide, claiming close to 7 million lives, with incalculable costs to economies, mental health, public order, and social stability. Covid-19 also took a heavy toll on the Philippines, with the latest figures as of April 2024 showing that over 4 million Filipinos were infected by the disease, with more than 66,000 deaths reported.

For over two years, as Covid-19 ravaged the planet, it seemed like life would never return to what people began referring to as "the new normal." Governments and scientists raced to find a solution to the pandemic, which meant finding a solution to the disease itself—a vaccine that would work against the virus. Deadly or debilitating diseases caused by viruses like poliomyelitis have been put largely under control or totally eradicated (in the case of smallpox) because of vaccines.

According to the US-based CDC, vaccines typically take 10 to 15 years of research and development in private and university laboratories before they are considered effective and safe enough for public use. But given the damage the virus had already done and was yet threatening to spread at breakneck speed, the world just didn't have that much time to wait.

The global push for developing an effective vaccine against the SARS-CoV-2 virus therefore received unprecedented support as soon as its genome was published in January 2020. Scientists from the US NIH and Moderna quickly pivoted from studies of other viral vaccines to focus on a vaccine candidate for Covid-19, the mRNA-1273, "to respond to the outbreak."

Within the year, on December 11, 2020, Pfizer (followed a week later by Moderna) received emergency use authorization for its vaccine by the US FDA. Other vaccines from China, Russia, and the United Kingdom also became available.

The Philippine government's Covid-19 vaccine rollout was launched on March 1, 2021. On this day, UP-PGH became the first hospital to administer the vaccine after the Philippines received 600,000 doses of donated Sinovac's CoronaVac vaccine from China.

Dr. Legaspi became the first Filipino officially vaccinated against Covid-19. Subsequently, many UP Manila officials and constituents were likewise vaccinated including some government officials who were in attendance that day. Before the rollout, PGH conducted simulations not only of vaccine preparation, vaccination, and monitoring for adverse effects, but also of the arrival and storage of the vaccines with their cold storage requirements.

Also in March 2021, the Philippines received the first batch of AstraZeneca vaccines from the COVAX Facility. The aim was to fully vaccinate all HCWs of PGH by the end of March 2021.

Again, UP Manila figured prominently in the educational campaigns for vaccination and actively countered vaccine disinformation and misinformation through webinars and dissemination of helpful infographics. UPM faculty were the experts called upon for discussions via television, radio, and printed media regarding all aspects of Covid-19 vaccination.

> *"During the peak of vaccine hesitancy, physician-scientists of UP Manila diligently gathered and analyzed evidence; and addressed the matter directly through national media which greatly enhanced vaccine uptake nationwide."*
>
> **- Dr. Charlotte Chiong**

Chancellor Padilla, Dean Chiong, and Director Legaspi were among the first recipients of the Covid-19 vaccine.

Return To Face-To-Face Classes

Limited face-to-face classes were restored in UP Manila when approval was given on July 14, 2021 by the CHED; after its ocular inspection of the college facilities and assessment by a team of experts from different universities. It had been finalized and vetted by the administration of the UP System after undergoing revisions many times to make sure that it was appropriate for all colleges.

As previously mentioned, the UP Colleges of Public Health and Medicine were instrumental in the preparations for face-to-face classes. Other SUCs and private colleges in the country adopted UPM's processes and changes to their own settings.

The second semester of AY 2022-2023 saw UP Manila curricular programs in all colleges return to face-to-face classes.

(Upper photo) One of the limited face-to-face classes restored after the peak period of the pandemic was the Learning Enhancement in Anatomy Program of the UP College of Medicine.
(Lower photo) Officials and faculty of UP Manila during the 2022 Commencement Rites when onsite graduation ceremonies were restored

Building Resilience: Pandemic Response Playbook for National Crisis Preparedness

Given that there was no reference manual or "playbook" so to speak on the correct way of responding to the Covid-19 pandemic, the UPM administration acknowledged that some of the most important lessons were learned from painful experiences.

The Institute of Health Policy and Development Studies (IHPDS) of UP-NIH drew from the expertise and shared knowledge for the creation of the Pandemic Response Playbook. IHPDS Director Dr. Hilton Lam, together with co-workers: former CAS Dean Leonardo Estacio, Ma. Esmeralda Silva of CPH, and Dr. Michael Mendoza of CD and in collaboration with National Economic and Development Authority, conducted a series of focus group discussions (FGDs) in preparing this playbook.

One of several focus group discussions for the preparation of the Pandemic Response Playbook

The first FGD was held on June 10, 2022, participated in by important stakeholders from selected UPM colleges who found points of agreement in light of scientific evidence. Held at the Chancellor's Board Room with simultaneous online streaming of the conference, the draft of the Pandemic Response Playbook was received positively in the UPM community as the open forum tackled most concerns. Experiences, translations, graphics, administrative resolution templates, and all other issues were discussed. Six reaction topics were presented at the first FGD that summarized the UP Manila experience.

The second FGD was held on August 10 with NEDA and DOH, followed by a third meeting on September 6, and another on October 5. Questions asked during the meetings included who should take charge of a future pandemic response, how to make the playbook more effective, what elements to consider for addition or deletion, what improvements were needed to prevent fraud or corruption during a pandemic response, how to improve the bio-surveillance component of public health, and how to ensure food security.

The last three FGDs were focused on getting insights from selected LGUs in the National Capital Region, in the Visayas, and in Mindanao. The third FGD included members from the Metro Manila Health Research and Development Consortium (MMHRDC).

The fifth and final FGD was held on October 7, 2022. The draft Pandemic Response Playbook to cover selected LGUs in the Visayas and Mindanao region was discussed. During that time, reactors and participants shared their experiences, observations, and their best practices in managing Covid-19.

The Philippine Pandemic Response Playbook sought to develop a manual that would "guide government policies and the non-government stakeholders in case such national crisis occurs again in the future." It was the research output that formalized the how-to's of the system and allowed stakeholders to exercise their roles in an orchestrated manner.

The methodology in developing the draft Pandemic Response Playbook could be summarized in three parts—search, review, and validation. The team searched and reviewed the available literature on the topic. From the published peer-reviewed journal articles (at least 154 by 2022) included, the outputs underwent a validation process where the assigned investigator reviewed the research outputs, sought group agreement among the investigators, and discussed these findings in the FGDs.

Seven essential points for resiliency in capacity building emerged from the results of the review of the literature and ensuing roundtable discussions:

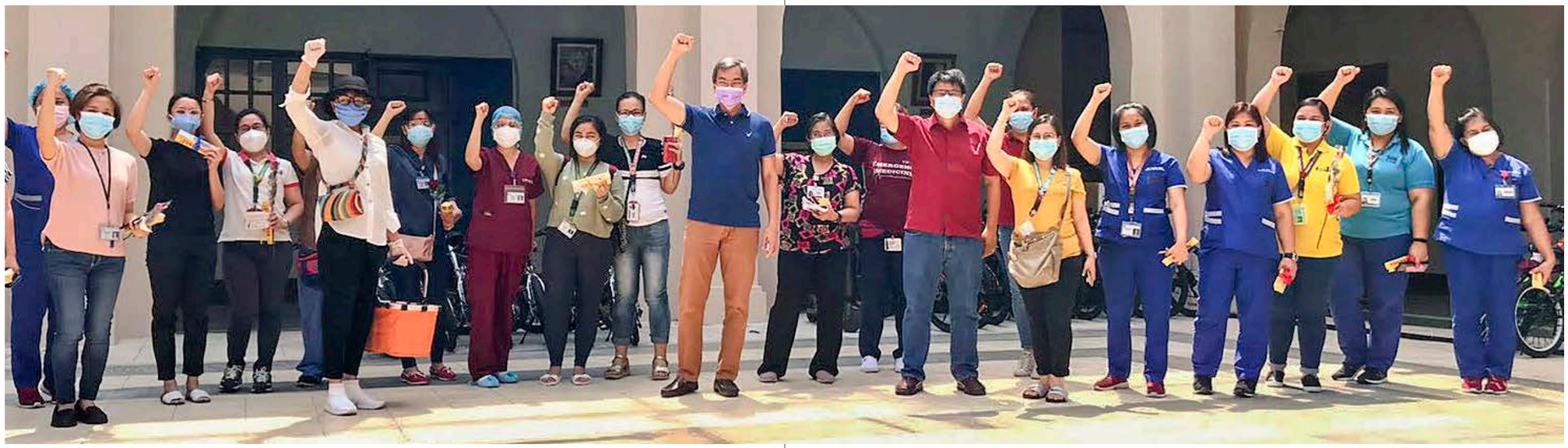
1. The need for more Universal Health Care investments;
2. Temporary support by creating reservist health workers;
3. The need for a central command;
4. Training modules to quickly train and uniformly capacitate future LGU pandemic responders;
5. Time-limited flexibility;
6. Syndemics being more than just clusters of health epidemics; and
7. Enhancing existing infrastructure and systems on nutrition, education, employment, housing, workplace safety, and social services including hunger and poverty alleviation.

Likewise, the eight general elements of the Philippine Pandemic Response Playbook:

1. Constant, vigilant monitoring of events nationally and internationally with big data analytics;
2. Epidemiologic rating;
3. Rapid containment at the borders;
4. Rapid containment in community hotspots;
5. Risk-based national responses with LGU implementation;
6. Risk communication to community;
7. Mass vaccination and boosters; and
8. Post-implementation evaluation.

Specifics of the role-sharing actions between national government offices and LGUs were discussed. Dr. Lam explained the concept map at the focus group discussion. National government tasks focused on national risk communication to community, mass vaccination, post-implementation evaluation, big data monitoring, epidemiologic rating, and rapid containment at the border and at community hotspots.

The FGDs also highlighted economic recovery elements, monitoring and evaluation actions, and scenarios when these activations would take place. When a public health emergency is declared, every descriptor from the concept map would be activated.



PGH honors frontliners who are mothers during Mother's Day celebration with tokens of appreciation

Looking to the Future

The pandemic and the hard lessons it imparted to UP Manila and its constituents, particularly to those in the health services sector, invited the University's leaders and administrators to reflect on their mission and seek ways of serving the Filipino further in their times of greatest need.

For Dr. Legaspi, it was a matter of revisiting and reaffirming his vision of making UP-PGH the "St. Lukes Global City" of the nation's indigent patients. Whatever the rich and privileged patients have, the poor patients in PGH also should have. In addition, he hopes that the pervasive culture within the hospital would be *magaling na, mabait pa* (not just excellent but also kind). Everyone should continue to provide excellent service but do away with arrogance and instead show kindness and compassion.

He also shares these four lessons that he believes served UP-PGH well during the pandemic and should be remembered for the future. Of these, he thinks the fourth one is the most important and the most effective:

1. Fight the fear.
2. Believe in good science.
3. Never let your guard down.
4. Take care of each other.

Dr. Berberabe reiterates the importance of information. He highlights these five pillars:

1. Information is vital in this age of fake news.
2. IEC is indispensable.
3. Utilize the power of knowledge.
4. Equip the people with knowledge and you will allay their fears.
5. Teamwork is important.

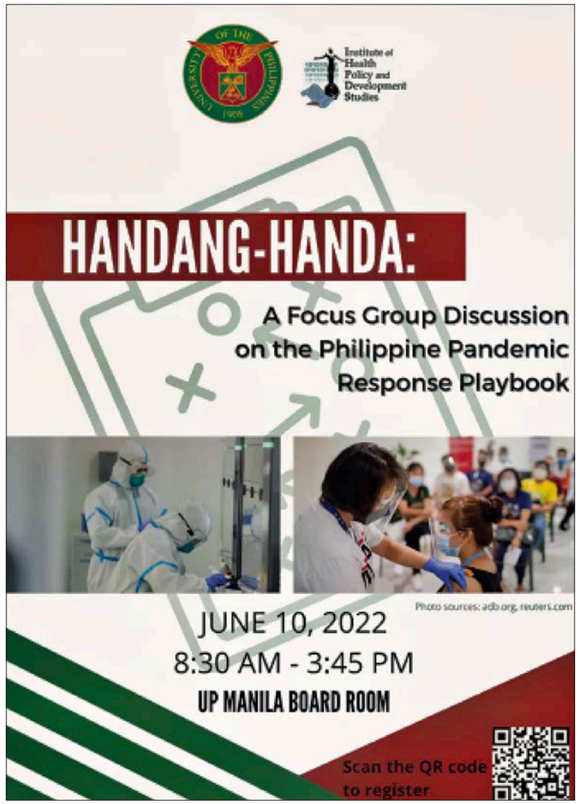
Dr. Serrano has great admiration for the people and their efforts. He says, "If the pandemic has taught me anything, it was to restore my faith in the goodness of others." He attests that:

1. The Filipino people are truly resilient.
2. Despite all their flaws—selfishness, lack of discipline, wanton disregard for rules and regulations, disorderliness, recklessness, and callousness—there will always be people who will rise above these and display true courage and responsibility.
3. We have people who will step up to the challenge of life over death.
4. People will choose to serve the many rather than only themselves.

Dr. Berba saw the power of prayer and the people. Her top lesson is, "look up to God and to the people" and she says:

1. It is important to feel the value of friendships and relationships.
2. Your companions will be the ones who will keep you well physically, mentally, and emotionally.
3. It's necessary to keep your cool. You can't be too stressed.
4. I pray; my day begins and ends with a prayer.

Dr. Dofitas believes in kindness. For him, kindness and willingness to help each other are the most important. In a life and death situation, losing one's calm in a moment of anger would lead to nothing. If orders and instructions are given without kindness, the people may choose to do them out of obligation. However, when you give orders in a kind way and instructions are explained, they will follow them properly and do them with kindness as well.



Final Thoughts from Chancellor Padilla

For Chancellor Carmencita Padilla, who led UP Manila through one of the most formidable periods in its history, it had been both a time to act and a time to learn. Above all, it was a time to prove and reaffirm what UP stands for, as a bastion of honor, excellence, and service. "The three years of the Covid-19 crisis was the most difficult and challenging for all of us in UP Manila. We had to act and deliver just the same; but realign our academic, research, and community service functions accordingly, amid fear, uncertainties, and the threats of the pandemic. During those crucial times, the university transcended mandates and accomplished more than what we imagined. The deep sense of community and the *bayanihan* spirit among our members and the collaboration within and with outside sectors and institutions anchored every aspect and dimension of our pandemic response; and these brought our university's goals to fruition.

"From 2020 to 2022, UP Manila became more than a university and the PGH became more than a hospital—providing high quality education, training, and health care while ensuring protection, comfort, and hope to the healthcare workers, patients, trainees, and other personnel.

"I believe we're ready for what we will face in the future. We don't want pandemics, but we're prepared and committed. The next crisis may have a different flavor; but again, we will rise to meet the challenge head on with an out-of-the-box approach and put effective systems in place to guarantee success. The UP Manila community has proven that it can be harnessed to work, collaborate, and innovate.

"We will use all past experiences, everything we went through—the best practices, lessons learned, insights gained— in handling future exigencies. The important thing is we know better, and we are as determined as ever to respond and serve."

Conclusion

As the number of Covid-19 cases went down, the University settled into a familiar, albeit a more vibrant rhythm—scientific and research activities resumed with greater zeal, learning initiatives brought education to even higher levels, service to constituents and society expanded in coverage, and all other responsibilities and commitments were given renewed attention.

UP Manila's response to the Covid-19 pandemic was impactful and encompassing, where science guided all the steps to vanquish the virus; where generosity, grit, and humanness prevailed; and where each member willingly gave more of oneself for the whole to triumph. Gratitude is therefore owed to all the men and women of our community for this trailblazing feat!

The UP Manila family now comes together to thank the Almighty for blessing it with brilliant leaders, sharp minds, robust bodies, and most of all, compassionate hearts that persevered in a unified journey towards a healthy "new normal." The world would never be the same after a pandemic that ravaged all of humankind, leaving deep and lasting scars in the hearts, minds, and bodies of those fortunate enough to survive. But for those who did—including those who served and whom UP Manila served—life assumed a new urgency and vigor, bringing fresh reasons for hope.

A joyous send-off at the hospital corridor showing a triumphant child who survived severe Covid-19 surrounded by a jubilant crowd of not only grateful relatives but also teary-eyed HCWs

UP MANILA - PGH OFFICIALS

Chancellor's Advisory Council

March 2020

Dr. Carmencita D. Padilla	Chancellor
Dr. Nymia P. Simbulan	Vice Chancellor for Academic Affairs
Dr. Arlene A. Samaniego	Vice Chancellor for Administration and Finance
Dr. Michael L. Tee	Vice Chancellor for Planning and Development
Dr. Armando C. Crisostomo	Vice Chancellor for Research
Dr. Eva Maria Cutiongco-de la Paz	NIH Executive Director
Dr. Gerardo D. Legaspi	PGH Director
Dr. Leslie Michelle M. Dalmacio	Assistant to the Vice Chancellor for Academic Affairs
Dr. Johanna Patricia A. Cañal	Assistant to the Vice Chancellor for Planning and Development
Dr. Charlotte M. Chiong	Dean - College of Medicine
Asst. Prof. Bienvenido S. Balotro	Dean - College of Pharmacy
Dr. Danilo L. Magtanong	Dean - College of Dentistry
Dr. Vicente Y. Belizario, Jr.	Dean - College of Public Health
Dr. Sheila R. Bonito	Dean - College of Nursing
Dr. Leonardo R. Estacio	Dean - College of Arts and Sciences
Dr. Melflor A. Atienza	Dean - National Teacher Training Center for the Health Professions
Dr. Maria Eliza R. Aguila	Dean - College of Allied Medical Professions
Dr. Filedito D. Tandinco	Dean - School of Health Sciences
Dr. Tristan Nathaniel C. Ramos	University Registrar
Dr. Blesile Suzette S. Mantaring	Director - Office of Student Affairs
Dr. Arnold V. Hallare	Director - National Graduate Office for the Health Sciences
Dr. Anthony Geronimo H. Cordero	Director - Community Health and Development
Dr. Lourdes Marie S. Tejero	Director - Technology Transfer and Business Development Office
Prof. Sarah C. Johnson	Director - Learning Resource Center
Dr. Olympia Q. Malanyaon	Director - Information, Publication, and Public Affairs Office
Prof. Geoffrey Solano	Director - Information Management Service
Dr. Eric S. Talens	Director - Ugnayan ng Pahinungod
Dr. Leilanie A. Nicodemus	Director - Center for Gender and Women Studies
Dr. Ernesto S. Uichanco	Coordinator - Office of the Anti-Sexual Harassment
Dr. Iris Thielle Isip-Tan	Director - Interactive Learning Center
Dr. Tammy L. de la Rosa	Director - Office of International Linkages
Dr. Leonora C. Fernandez	Coordinator - Office of Continuing Education
Ms. Maria Nimfa V. Castro	University Librarian
Ms. Lovelle C. Saguid	Chief - Budget Office
Atty. James Dennis Gumpal	Chief - Legal Office

PGH Officials

Dr. Gerardo D. Legaspi	Director
Dr. Juliet O. Sio-Aguilar	Deputy Director for Health Operations
Dr. Maria Teresa Julieta U. Benedicto	Deputy Director for Administration
Dr. Ma. Margarita Lat-Luna	Deputy Director for Fiscal Services
Ms. Cecilia G. Peña	Deputy Director for Nursing Services
Dr. Jose Jonas D. Del Rosario	Coordinator for Public Affairs
Dr. Christopher Malorre E. Calaquian	Quality Management Representative
Dr. Scarlett Mia S. Tabuñar	Coordinator for Alumni Affairs and Extension Services
Dr. Rodney B. Dofitas	Coordinator for Linkages and Continuing Professional Development
Dr. Orlando O. Ocampo	Coordinator for Emergency and Ambulatory Services
Dr. Homer U. Co	Coordinator for Health Services
Dr. Stella Marie L. Jose	Coordinator for Training
Dr. Jean Anne B. Toral	Coordinator for Research
Dr. Apolinario Ericson B. Berberabe	Coordinator for Infrastructure and Special Projects
Dr. Racel Ireneo Luis C. Querol	Coordinator for Equipment
Mrs. Nanette C. Masangkay	Coordinator for Facilities Management
Dr. Scarlett Mia S. Tabuñar	Coordinator for Resource Generation
Dr. Paul Matthew D. Pasco	Coordinator for Medical Assistance
Dr. Nelson T. Geraldino	Coordinator for Hospital Rates
Dr. Christopher Malorre E. Calaquian	Coordinator for Philhealth
Dr. Scarlett Mia S. Tabuñar	Assistant Coordinator for PhilHealth
Mrs. Elsa G. Esteban	Chief, Institutional Reseach, Planning and Development Staff
Ms. Sylvia R. Cornejo	Chief, Intemal Audit Special Services Staff
Atty. Hope R. Valenzuela	Chief, Legal Office
Dr. Grace Anne A. Banson-Herbosa	Chair, Department of Anesthesiology
Dr. Jorge G. Ignacio	Chair, Cancer Institute
Dr. Eileen Liesl A. Cubillan	Chair, Department of Dermatology
Dr. April B. Llaneta	Chair, Department of Emergency Medicine
Dr. Allan R. Dionisio	Chair, Department of Family and Community Medicine
Dr. Ma. Cristina L. Estrada	Chair, Department of Hospital Dentistry
Dr. Nelson T. Geraldino	Chair, Department of Laboratories
Dr. John C. Añonuevo	Chair, Department of Internal Medicine
Dr. Leonor I. Cabral-Lim	Chair, Department of Neurosciences
Dr. Efren J. Domingo	Chair, Department of Obstetrics and Gynecology
Dr. Marissa N. Valbuena	Chair, Department of Ophthalmology and Visual Sciences
Dr. Juanito S. Javier	Chair, Department of Orthopedics
Dr. Josefino G. Hernandez	Chair, Department of Otorhinolaryngology-Head and Neck Surgery
Dr. Esther A. Saguil	Chair, Department of Outpatient Services
Dr. Maridione M. Suter	Chair, Department of Pay Patient Services
Dr. Lorna R. Abad	Chair, Department of Pediatrics
Dr. Anselmo T. Tronco	Chair, Department of Psychiatry and Behavioral Medicine
Dr. Miriam Joy C. Calaguas	Chair, Department of Radiology
Dr. Sharon D. Ignacio	Chair, Department of Rehabilitation Medicine
Dr. Crisostomo E. Arcilla, Jr	Chair, Department of Surgery

Photo Credits

Dr. Isa Acosta
Dean Maria Eliza Aguila
Adrianne Alfaro, RN
Dr. Miguel Sandino Aljibe
Mary Joy Beneciro, RN
Dr. Blance Benitez
Dr. Regina Berba
Dr. Rafael Bundoc
Dr. Alvin Caballes
Dr. Johanna Patricia Cañal
Dr. ER Claudio
Dr. Jonas Del Rosario
Dr. Maria Julieta Germar
Dr. Louisa Joan Go
Dr. Martin Ilustre
Dr. Athena Ibon
Dr. Markyn Kho
Dr. Ephraim Leynes
Dr. Olympia Malanyaon
Dr. Justin Maranan
Dr. Issa Matibag
Dr. Orlando Ocampo
Fr. Marlito Ocon, SJ
Dr. Amanda Oreta
Dr. Carmencita Padilla
Dr. Gianne Pagulayan
Dr. Anthony Perez
Dr. ER Raymund
Dr. Yasmin Salces
Dr. Dennis Serrano
Mr. Howie Severino
Dr. Edward Wang
Dr. Brent Viray
UP-SIBOL Team