



## Special Report

# Rigorous Infection Prevention by Tzu Chi Hospitals Block COVID-19 Infections

As pneumonia cases caused by the novel coronavirus continued to expand, Tzu Chi Hospitals across Taiwan began their pandemic prevention strategies. From restriction access to the hospital, separating workflow, to using negative pressure isolation rooms, frontline personnel were cautious when facing the disease. Tzu Chi volunteers also stepped forward and worked together to rigorously protect the health of the general public.

## Yuli

### Small Town Hospital is Cautious with their Testing

With the arrival of the Lunar New Year, the small town of Yuli was crowded with tourists and those returning home, and there was a deep fear of infection spreading. Chen Yan-Bi, the superintendent of Yuli Tzu Chi Hospital, led colleagues to hold a pandemic prevention simulation on the afternoon of January 22nd, 2020. Colleagues from the relevant units followed training to conduct the simulation, and discussed improvements at a review meeting.

As local cases of COVID-19 increased, Yuli Tzu Chi Hospital wanted to avoid any holes in their prevention strategy. Hence, as soon as the Central Epidemic Control Center announced new information, the infection control staff and response team would immediately adjust and improve their pandemic strategy accordingly. Temperature testing stations were instated to promote mask wearing and temperature checking, as well as enquiring about travel history, occupation, contact history, and cluster history. Hospital visits were also restricted, and only one person was allowed to accompany patients (with stamps on the



After simulation, colleagues met to review the workflow. Centre: Dr. Hsu Yao-Sheng; Nurse facing camera: Nursing Director Kuo Ya-Ping.





**The spread of the pandemic led to increased prevention strategies, and Yuli Tzu Chi Hospital applied masks, temperature checks, hand hygiene and associated checks to every person entering the hospital.**

hand or documentation as record).

When treating suspected cases, although frontline doctors wore standard protective clothing, there was still a chance of cases coughing, sneezing, or producing air droplets that can come in contact with the doctor during testing. Therefore, SKED throat swab hoods were used, with gloves and testing tracts added. After being trialed by Dr. Lee Chin-San, Dr. Hsu Chih-Chen, and Dr. Xu Yao-Sheng, it was used when conducting tests for suspected cases.

After restricting access to the hospital, staff in the hospital employed a roster of three shifts a day. Superintendent Chen Yan-Pi was concerned about the hardworking healthcare workers, technicians, and administrative colleagues, and often visiting each unit. She also expressed gratitude to all colleagues at the hospital for protecting the health of the town's residents regularly, as well as gearing up to combat the pandemic, and hoped that the pandemic could be controlled soon.



Yuli Tzu Chi Hospital Dr. Lee Chin-San testing the throat swab hood.







## Kuanshan

### **20th Hospital Anniversary Coincides with Pandemic, Preventing Infection with a Heart of Gratitude**

To control the pandemic, Kuanshan Tzu Chi Hospital set up temperature checks at the atrium and emergency department entrance. The wearing of masks was strongly promoted for all staff entering the hospital, hand sanitizers were placed at entrances, and the number of visitors to wards and people accompanying patients was also restricted. These multiple measures were placed to try and reduce infection risk. At the early stages of promotion, the



**In February, Kuanshan Tzu Chi Hospital built new tents for a basic fever testing station.**



**In response to the COVID-19, Kuanshan Tzu Chi Hospital set up a rudimentary isolation area, as well as fever testing at the entry and exits.**



**From April 23rd, 2020, Kuanshan Tzu Chi Hospital began a charity movement, with the love proceeding towards eliminating the pandemic.**

general public were initially not used to the measures, but gradually they were all able to follow the regulations and comply with the hospital's infection prevention.

Infection control doctor Ma Xiu-Mei delivered daily updates on the pandemic and reviewed regulations, and the rostered staff also gave recommendations to improve workflow. Director of Chinese medicine Shen Yi-Ying also shared with colleagues the health promotion strategies in Chinese medicine and provided tips on cupping and gua sha to improve circulation and strengthen the immune system.

The whole hospital also followed the global prayer movement of "working together whole-heartedly to eliminate the pandemic". Led by Superintendent Zhang Zhi-Fang, the directors and administrative colleagues prayed in the atrium of the ground floor, and other colleagues also prayed in time in their units. In February, the hospital temporarily constructed a testing area surrounding the original emergency



**Through promotion, Kuanshan community members all adhered with hospital standards of wearing a mask when attending hospital.**

department through contractors. Later on, the Tzu Chi Foundation lent the hospital tents, so that simple fever testing clinics could be set up, and be more appropriate to needs.

Kuanshan Tzu Chi Hospital had its 20th anniversary in March, but due to the pandemic, all celebratory events were cancelled, so manpower and focus could be placed on working for the pandemic.

In the past 20 years since establishment, the small-town hospital stands firmly, with Chinese medicine making it famous and the dialysis unit servicing those with kidney problems. Servicing the locals, the 24-hour emergency prevents people in the community from having to travel far to seek medical attention in the middle of the night. Although Kuanshan Tzu Chi Hospital is small, it has a broad range of services for all needs, and as it heads towards its 21st year, continues to extend compassion and care to those in faraway places.

## Hualien

### **Access Restrictions Activated from Chinese New Year Eve, Screening those Attending Hospital so there is None Missed**

In response to the COVID-19 pandemic, on the noon of January 21st before Chinese New Year, the infection control department at Hualien Tzu Chi Hospital held an emergency meeting.

Led by Lee Jen-Jyh, commander of the eastern region of the infectious disease prevention network and consultant Wang Lih-Shinn, they discussed pandemic strategies. As stated by Commander Lee Jen-Jyh, following recommendations from the Centers for Disease Control, first-line staff must wear masks and be vigilant in hand hygiene. In addition, if patients are found to have a fever or respiratory symptoms, as well as a travel history to China in the past 14 days, they will be

**On the 21st before Chinese New Year Eve, Hualien Tzu Chi Hospital Infection Control Team held an emergency meeting, led by Lee Jen-Jyh, commander of the eastern region of the infectious disease prevention network and consultant Wang Lih-Shinn, to discuss pandemic strategies.**





directed by the clinic head nurse to the negative pressure rooms in the emergency department for a chest Xray and test swab. The team from infection control will also be notified, so that when any patients with suspected COVID-19 attends, the whole workflow is isolated and there is no chance of missing cases.

### **Infection Control Upgrades, 24-Hour Roster Safeguards**

With confirmed cases gradually appearing in Taiwan, on January 24th Chinese New Year Eve, the Centers for Disease Control announced increased measures for the pandemic, and Hualien Tzu Chi Hospital held an emergency meeting and decided that, from Chinese New Year Eve, all people entering the hospital must wear masks, and any visitors or family members with fever or respiratory systems would not be allowed to enter hospital rooms. All patients would be restricted to two family members or visitors, and there would be restrictions to hospital access, with a fever testing station staffed 24 hours a day by a roster of volunteers, and hospital nursing and security staff to check the temperature of all those entering the hospital. If any people were found to have a fever or respiratory systems, they would be directed to attend for medical attention at the emergency department.



**Healthcare volunteers helping take temperatures and sanitize hands at the atrium of the clinics.**



**On February 17th Hualien Tzu Chi Hospital began using telehealth. Doctors can give medical advice through video calls on tablets or through telephone for those quarantining at home that need medical attention or those requiring tests.**





With the pandemic leading to a blood shortage, Hualien Tzu Chi Hospital collaborated with the Hualien Blood Donation Station of Taipei Blood Center, installing blood donation spots at the front of the hospital atrium on February 18th. Hospital staff, volunteers, and community members all participated generously.

## Using Technology to Combat the Pandemic

To work towards combating the pandemic, apart from setting up fever screening stations in accordance with regulations, Hualien Tzu Chi Hospital also installed a new infrared thermal imaging device on February 6th, providing real-time information about the temperatures of people entering and existing.

Besides wearing masks, increasing hand washing is also very important! As stated by Hualien Tzu Chi Hospital Respiratory physician Lee Jen-Jyh, who also commands the eastern region of the



Hualien Tzu Chi Hospital innovatively set up two negative pressure testing rooms outside the hospital. Chen Kun-Chuan (right), director of the Emergency Department, and Nurse Unit Manager Lu Chia-Yi (left) demonstrate how to perform a test swab under precautions to keep healthcare workers and patients safe.

infectious disease prevention network, current medical practice agrees that COVID-19 is transmitted through airborne droplets or contact. In the circumstances when hands are not clean, touching your mouth, nose, and eyes should be avoided to prevent infection. When washing hands, the memory prompt from the Centers for Disease Control should be remembered – inside (palms), outside (backs of hands), in between (between fingers), arch (back of fingers), big (thumb), upright (fingertips), wrist (wrists).

## **Blood Bank in Need, Frontline Healthcare Workers Donate Compassionately**

Due to blood banks reserves across Taiwan being critically low, Hualien Tzu Chi Hospital collaborated with the Hualien division of Taipei Blood Center. On February 28th, blood donation stations were set up at the entrance to the atrium, and hospital colleagues, volunteers, and community members



**On March 11th, Chen Ming-Qun, director of Hualien Tzu Chi Hospital Pediatric Unit Community Pediatrics, led a team educating children about the pandemic and health knowledge at the Whirl Lan Parent-Child Center.**





were all called on to donate on the “blood donation van”. Coming to donate before reaching the upper age limit of 65 years old, Superintendent Ling Shinn-Zong expressed immense gratitude for the generosity of hospital colleagues in donating blood. He happened also to be blood type O, which the blood bank was most in need of, and he believes that donating a bag of blood not only saves a life, but also shares Da Ai.

Medical Affairs Secretary Li Yi, who has a habit of regularly donating blood, expressed that seeing someone saved

by bag of blood in the operating room is valuable and joyful. Furthermore, donating blood can stimulate blood cells production and blood metabolism, and is a way of maintaining health.

Nursing staff also participated wholeheartedly. Head Nurse Chou Ying-Fang said that when working in the hospital, there is a deep understanding of the impact on patients when there is a lack of blood. Therefore, when hearing of the blood shortage, she invited nursing students on placement to also join in donating. Apart from healthcare



**From March 16th, Yen Po-Wen (second from right), CEO of the Tzu Chi Foundation, led colleagues at the foundation to assist in the restriction of access to Hualien Tzu Chi Hospital. Lin Chin-Lon (first from right), CEO of the Tzu Chi Medical Foundation, visits those on shift.**



**The Geriatric and Community Medicine Unit of Hualien Tzu Chi Hospital headed to Ji Gong Neighborhood to educate the elderly members of the community on pandemic prevention.**

colleagues, administrative colleagues, Tzu Chi volunteers, and accompany family members from the community all rolled up their sleeves to “donate blood and share love”, hoping to generate bags and bags of blood to replenish supplies.

### **Medicine Dispensed at Quick Stop Windows, No Need for Chronic Disease Patients to Enter Hospital**

From February 24th, Hualien Tzu Chi Hospital also began using quick stop window for the repeat prescriptions

of chronic disease patients, operating through an internet booking system. Patients with chronic disease, or their family members, just needed to book in a date on Hualien Tzu Chi Hospital website to collect the second or third repeat of their prescription, and head to the collection window at the side of the hospital at the designated time and collect the medicines there after scanning their card and paying, saving a lot of time waiting for dosages to made and waiting to collect medicine.





## Dalin

### **Facing Trial after the New Year, Implementing Precautions for the Pandemic**

From January 23rd, in accordance with regulation from the Centers for Disease Control and to address the spread of the pandemic, Dalin Tzu Chi Hospital increased health promotion, and put in place a segregated work flow for suspected cases to be treated in isolation, so patients going to the hospital did not need to worry.

Infection Control at Dalin Tzu Chi Hospital stated, the hospital already had hand sanitizers at each entrance, and

a mask vending machine in the atrium. Health promotion posters were added to each entrance, to remind patients and family members with a travel history to Wuhan and fever or respiratory symptoms to wear masks in the hospital and be aware of coughing etiquette. Moreover, they should disclose whether they had traveled to the Wuhan region of China in the past 14 days prior to becoming ill, as well as their travel history, occupation, contact history, and whether they gathered in any clusters.

Dalin Tzu Chi Hospital is sizeable, and to effectively control the pandemic, large scale cooperation was needed. Respiratory physician Lai Chun-Liang, deputy director of the hospital, held daily



**On January 23rd, Dalin Tzu Chi Hospital set up fever screening waiting areas outside the emergency department. If there were any suspected cases, they would be asked to wait in the fever screening waiting area, and be seen under negative pressure conditions.**



**From January 29th, the first day of clinic at Dalin Tzu Chi Hospital after the new lunar year, restriction of access and screening began at entry points. Superintendent Lai Ning-Sheng (third from right) and hospital directors visit colleagues working on the frontline.**

infection control meetings, attended by officers from the superintendent's office, Head Secretary Liu Zhen-Rong, the infection control unit, the medical affairs office, the IT office, the nursing unit, the public communications office, and the volunteer group etc.

As the general coordinator, Deputy Supt. Lai Chun-Liang (chest medicine expert) stated, despite some initial inconvenience, there was no choice but to close off certain entrances. At the beginning, some habitual processes might be occasionally forgotten, but there would be continual encouragement and promotion, and some minor adjustments in workflow to assist everyone. Under the limited manpower, operations were still successful, with temperatures being

measured in every flow line, as well as important pandemic measures such as wearing masks and washing hands. With increased awareness, the pandemic would be easier to manage. Likewise, the wards also had restriction of access and health promotion.

### **Spirits Boosted by Essential Oils and Four Spirits Soup**

With COVID-19 cases continuing to escalate and limited supply in masks, anxiety increased around the globe. Wanting to extend care for all staff at the hospital, the volunteers from Dalin Tzu Chi Hospital raised funds to buy Australian tea tree oil and Chinese juniper oil made by the Abode of Still Thoughts. Rose oil also





came from patients, and every day the oils would be dispensed into clear glass 1ml containers. Three hundred bottles were made, with the goal of making over 2000 bottles, so that all staff at Dalin as well as Douliu Tzu Chi Hospital could receive the blessings.

### **Upgrades to Hardware in Combination with Software, Increasing Energy in Combating the Pandemic**

With the continuation of the pandemic, frontline staff the hospital experienced stress and pressure. The Chinese medicine department of Dalin Tzu Chi Hospital produced “vital energy pandemic prevention Korean mint extract and concentrate”, and delivered it to each department of the hospital from March 2nd, not only improving the immune system but also giving a sense of warmth and comfort to those under heavy pressure.

### **Commanding Technology and Using Online Booking System for Hospital Visits**

Additionally, Dalin Tzu Chi Hospital launched “online booking system for hospital visits” on March 2nd, allowing patients to log onto the system on their smart phones, and also answer travel and



**Yeh Ming-Hsien, Director of Dalin Tzu Chi Hospital Chinese Medicine Department Injury Specialist, and the team make Korean mint vital energy concentrate, to strengthen the immune system and relieve stress in colleagues.**

contact history at the same time. This helps reduce risk of infection in inpatients, and prevents disease spread.


Huang Zhi-Wei, from the information department that was responsible for the development of the system, states that the hospital provides inpatients at the hospital a set of authorization codes. The patient can then decide whether to provide the codes to family or friends. The code allows access to scan a QR code for the booking system, and by following the steps to provide the code, personal ID, visit time, and TOCC, including the travel history in the past 2 months, occupation, contacts, clusters etc, they can submit and receive confirmation from the hospital to visit.

## **Volunteers Work Hard for 3 Days, Building Tent for Segregated Screening Station**

In accordance with pandemic response strategies, the infection control team at Dalin Tzu Chi Hospital, together with the emergency department, general affairs office, engineering affairs office, Tzu Chi Foundation Central Region Construction Office, and Chiayi Tzu Chi volunteers worked together and planned. From March 5th, they worked together for three days to construct a “Multi-purpose Screening Station” at the emergency meeting area outside the emergency

department. This provided a safer working environment and reduced the infection risk within the hospital. For this cause, the Chiayi Tzu Chi volunteer group mobilized 187 people, completing the building of over 100 ping in three days.

The materials from the segregated screening station came from emergency housing that the Red Cross set up in Leye village in Alishan during the eight-eight flood of typhoon Morakot in 2009. After 4 to 5 years and until now, under the assistance of the Tzu Chi Foundation, the materials used to build housing for the eight-eight flood was recycled and used to make temporary classrooms for Dounan Senior High School in Yulin when



**From January 29th, the first day of clinic at Dalin Tzu Chi Hospital after the new lunar year, restriction of access and screening began at entry points. Superintendent Lai Ning-Sheng (third from right) and hospital directors visit colleagues working on the frontline.**





**Functional as well as strong, the testing station was constructed using repurposed material from the emergency housing during the eight-eight flood of Typhoon Morakot.**

their administrative building was under reconstruction.

Chiayi Tzu Chi volunteers Wang Shou-Rong, Wu Han-Wen, Zhan Qing-Lang and others, built the outdoors screening stations, declaring, “Not to worry, the volunteers will assist completely”, causing the medical team to be greatly touched. Head Secretary Liu Zhen-Rong was very grateful for the contribution of the volunteer team. The screening station was able to include triage, clinic rooms, Xray room, review area, testing area,



**During the pandemic, Superintendent Lai Ning-Sheng uses telehealth to consult with patients overseas.**

waster area, and waiting beds, allowing for segregated workflow to care for the patients. The hospital bedside medical team went through certification by the Ministry of Health and Welfare, allowing test samples of patients with fevers to be sent directly to the laboratory and be processed in one day, instead of needing the samples to be sent to specific government appointed sites and taking 3 days to return a result due to increased transit times.



**Dalin Tzu Chi Hospital installed a facial recognition system with the ability to measure body temperature at the entry point for staff. Pictured is Chinese medicine doctor Chen Wei-Ren demonstrating how to open the door using facial recognition.**







## Taichung

### **Safety First in Extraordinary Time, Hospital Staff Promoting Adherence to Regulations**

In accordance with the COVID-19 pandemic regulations from Centers for Disease Control at the Ministry of Health and Welfare, Taichung Tzu Chi Hospital instated access restrictions for safety. Temperature testing, mask wearing, and hand sanitization measures were also increased in light of the pandemic.



**Taichung Tzu Chi Hospital restricted access at entry points, requiring masks and temperature checks to enter and leave the hospital.**

Everyone visiting the hospital was very observant of the measures, all saying, “This is necessary in these extraordinary times.”

On January 28th, the 4th day of the Lunar New Year whilst many were still on Lunar New Year leave, most hospital and health facilities returned to regular operation. Taichung Tzu Chi Hospital restricted access at each entry point, and reminded visitors and those attending hospital to wear masks and sanitize hands. Everyone was automatically very adherent to the measures in these “extraordinary times”.

### **Peritoneal Dialysis at Home to Avoid Traveling for Dialysis**

Dialysis can be generally divided into two types – hemodialysis and peritoneal dialysis. Of these, peritoneal dialysis can be performed at home, whereas hemodialysis patients need to attend hospital three times a week, a rate that cannot be reduced or interrupted. Dr. Chen Yi-Hsin indicated, when using peritoneal dialysis, patients can receive dialysis at home and only require review appointments at the hospital once a month. This not only assists in preventing the spread of COVID-19, but also reduces the amount of travel for patients, but also reduces the burden on accompanying family members.

Taichung Tzu Chi Nursing Home



**Chen Yi-Hsin, Director of Nephrology at Taichung Tzu Chi Hospital advising patients that have been approved by their doctor to have peritoneal dialysis, can have dialysis at home, reducing the need to go to hospital and preventing infection.**

also provided peritoneal dialysis therapy, allowing residents appropriate care, and reducing the burden on carers and families. Head Nurse Lai Hsiao-Ting stated, residents who transitioned from hemodialysis to peritoneal dialysis had improved blood pressure and blood sugar levels. Also, it was safer for the residents to reduce travel into and out of hospital during the pandemic, reducing stress for residents and their families.

### **Superintendent Leading in Handmade Green Dragon Chili Dish, Happily Going Vegetarian**

On the other hand, in response to Master Cheng Yen's reminder to pray and fast, from February 22nd we held a series

of events promoting vegetarianism, with Superintendent Chien Sou-Hsin leading colleagues in making a delicious side dish with green dragon chili.

The vegetarian event began on March 1st, with the goal of allowing colleagues in the hospital to enjoy vegetarian food. Tzu Chi volunteers were specially invited to show off their talents and prepare meals, making two additional different meals for staff and volunteers to enjoy at the cafeteria. RN Lui Hui-Ling stated, "The pandemic has been more severe recently, so we must fast and protect the world." Apart from changing the menu, there were also points to be collected, further attracting colleagues to eat vegetarian. Superintendent Chien Sou-Hsin and many colleagues also worked in





The Chinese Medicine Department of Taichung Tzu Chi Hospital making a “Healthy Blessing Drink” for colleagues in the hospital, as well as distributing the medicinal herbs to medical volunteers that were unable to come to the hospital.



the kitchen, starting by cutting chilis then adding ingredients one by one into the pan to make fragrant. They used the main ingredient of green dragon chili, as well as red chili, heaven chili, and fermented black soybeans, all to be stored in an airtight container to complete the delicious green dragon chili sauce as side dish.

### **All-Round Protection When Collecting Medicines**

In response to patients in Mainland China, Hong Kong, and Macau that were not able to travel back to Taiwan to collect their medicine due to the pandemic, Taichung Tzu Chi Hospital began a service allowing nominated persons to attend clinic and collect medicines. This was

eligible to patients in Mainland China, Hong Kong, and Macau with a Health Insurance card, who have visited the Taichung Tzu Chi clinic after October 2019 and received a prescription from their doctor. After filling the relevant “Representative Medicine Collector Form”, and producing two identifying documents, as well as the identity card of the patient (either the hardcopy, photocopy, or photograph), the nominated family member or friend can visit the clinic on behalf of the patient. After relaying the patient’s reason for not being able to return to Taiwan, as well as their current medical condition, the doctor can then prescribe the same medications as the previous prescription and allow the nominated person to collect the medication.



**Li Kuan-I, Director of the Emergency Department at Taichung Tzu Chi Hospital, demonstrating the operation of the new testing station. The result was also compiled into a literature paper and submitted to an international journal.**





**Superintendent Chien visiting the Fengyuan district. Image by Lai Ting-Han. During the pandemic, Superintendent Chien Sou-Hsien and team continue to visit patients. In front of the bus station at Fengyuan district, they inspect how Mr. Tu is using his walking aid.**

### **Upgrades to the Testing Area, Reducing Waste and Increasing Efficacy**

Originally, the testing area for Taichung Tzu Chi Hospital was in a tent outside the emergency department. After every test, protective equipment also had to be disposed of, producing an appalling amount of waste. From March 24th, a new testing station was installed in a special area outside the emergency department. The new station allowed doctors and

patients to be segregated as indoors and outdoors during testing, increasing safety and efficacy, and reducing the disposal of protective equipment. When testing volumes had to be increased, they could also respond quickly.

Li Kuan-I, Director of the Emergency Department explained that Emergency physician Dr. Tseng Yu-Chi first introduced the concept of a shipping container with the indoor and outdoor segregated. With further innovation, the hospital space was directly used with simple adjustments, altering the original airtight windows so

that the doctors and patients can be segregated as indoors and outdoors, communicating via walkie-talkie. With the patients outdoors, airflow is dynamic and sanitization is simply achieved by spraying with chloric acid water after each test. After waiting for the area to

air dry, the next patient can come in, not only guaranteeing the safety of both the doctors and patients, but also reducing testing time. In addition, the testing doctor does not need to wear protective equipment, reserving resources for the frontline as the pandemic evolves.



**Students from Ta Ming High School present hand drawn thank you cards and healthy eggs. Image by Ma Shun-De. On April 13th, Taichung Tzu Chi Hospital received hand drawn thank you cards and healthy eggs from Discovery Art & Language Preschool and Ta Ming High School students. The good wishes from children young and old filled Deputy Superintendent Hsu Chuan-Jen (middle) and colleagues' hearts with gratitude.**