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# Standing Together Fighting COVID-19 Storm for Children

Records of the Challenges of the Pediatric  
Dept. of Taipei Tzu Chi Hospital During the  
Omicron Outbreak

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At the height of the COVID-19 epidemic in Taiwan in 2021, around 950 children tested positive. 104 of these children were admitted to Taipei Tzu Chi Hospital. This seemingly large number was just the beginning. The raging Omicron variant spread like a wildfire from the adult population to infants and young children. Between April 1 and mid-June, around 300 children ranging from one month to 17 years of age who had tested positive for the Omicron variant were admitted to the dedicated COVID ward of the hospital. The unfamiliar symptoms caused panic and anxiety among parents and fatigue and exhaustion among frontline healthcare workers. Due to the added impact of the higher clinical workload associated with emergency care, the dedicated COVID ward, virtual appointments, on-site rapid tests, home care, and vaccination, the mental and physical strain on members of the pediatric team was overwhelming.

### **Creation of a Green Channel for Infants and Young Children in the Emergency Department and a Dedicated Evening Outpatient Clinic for COVID-Positive Children**

As the epidemic spread very rapidly, the Emergency Department was overflowing with patients in April. Dr. Yu Chun-Hsien, Director of the Department of Pediatrics, points out that “back then, the pediatric emergency



**After the Omicron variant spread like a wildfire to infants and young children, Dr. Yu Chun-Hsien, Director of the Department of Pediatrics, expresses his sincere gratitude to all members of the pediatric team for their unwavering efforts**



**After the resurgence of the epidemic, the emergency department is overflowing with patients, among them a significant number of young children and infants.**

unit had a maximum capacity of 135 patients a day. 90% of these patients had symptoms and were in the hospital to undergo a PCR test. The COVID positive rate was 80%.” Children cannot tolerate symptoms like fever, chills, cold limbs, body soreness, headaches, and sore throat like adults. Such symptoms cause extreme discomfort, crying and screaming, and lethargy in children. When they finally get to see a doctor, he can only quickly observe their spirit, activity level, skin complexion, and breathing status, conduct specimen collection, and give prescriptions through a plexiglass barrier. Dr. Yu Chun-Hsien voices his concern over this treatment process. “During this process, I keep asking myself whether I could miss a seriously ill child.” The chaos of the pandemic generates vexing dilemmas



**The pediatric team has set up a dedicated “Dusk” COVID outpatient unit for children with the ultimate goal of strengthening the rerouting of minor and adult patients and easing the pressure on emergency care capacities.**

for healthcare personnel since it greatly complicates the assessment of little patients. Their only choice is to provide health education to the best of their ability to remind parents which symptoms require immediate medical attention.

In consideration of the fact that children aged below two are unable to verbally express their discomfort, it has been decided upon discussions between the pediatric team and the emergency nursing team to set up an “express lane” for infants and young children in the emergency department. Emergency RNs first examine injuries suffered by these little patients before the doctors assess them, collect specimen, and provide medical care. The successive occurrence of the “En-En” incident (death by a 2-year-old allegedly caused by delayed hospitalization), which sent shockwaves through Taiwanese society, in mid-April and the death of a COVID-positive two-year-old due to severe complications in Keelung further aggravated the psychological burden of frontline healthcare personnel. In line with relevant government policies, Taipei Tzu Chi Hospital renamed the “express lane” to “green channel” and established a dedicated “Dusk” COVID outpatient unit for children with the ultimate goal of strengthening the rerouting of minor and adult patients and easing the pressure on emergency care capacities.

Dr. Wu Ping-Sheng of the Department of Pediatrics reveals that

“not all children with a fever can be hospitalized.” In accordance with current operating standards, children aged below three months are immediately hospitalized if they have a fever, whereas children aged between three and twelve months are only hospitalized if their fever exceeds 39 degrees unless they have critical symptoms. In contrast to 2021, patients no longer have to stay in the hospital until they test negative in the year 2022. During this outbreak, patients can return home to self-isolate once their clinical symptoms show improvement after treatment. However, not all parents can understand and accept these policies. If distraught parents request that their children be hospitalized, medical personnel have to rely on their professional judgment and patiently communicate with these parents with the ultimate goal of preserving hospital resources for patients that need them most.

### **All-out Rescue Efforts Like Skating on Thin Ice**

Dr. Yu Chun-Hsien states that “coronavirus symptoms in children mostly affect the upper respiratory tract, while some children exhibit croup-like symptoms.” In the course of the pandemic, healthcare workers have gained a constantly improving understanding of the symptoms associated with the Omicron variant. The



**During Yang Yang’s stay in the ICU ward, the nursing personnel utilize cartoons to calm him down; after his condition stabilizes, he is transferred back to the dedicated COVID ward where the nurses do their utmost to restore his health.**

original projection of a 2-5% incidence of febrile seizures turned out to be quite accurate. Conversely, the incidence rate of fulminant encephalitis was unexpectedly high.

In mid-June, the two-and-a-half-year-old Yang Yang (an alias) was unconscious and had a high fever and a seizure when he arrived by ambulance

at the emergency department. The physician on duty immediately performed a neurological examination and a computer tomography, which revealed cerebral edema. He was therefore admitted to the ICU ward with suspected acute encephalitis. The pediatric team made an all-out effort to save the child's life based on the fundamental principle that every child is most precious to its parents. They instantly administered antiviral drugs, intracranial pressure-reducing drugs, immunoglobulin, and steroid to control the patient's symptoms and emerging complications including disseminated intravascular coagulation, systemic or acute inflammation, and abnormal liver function. Four days later, the patient's condition had not worsened, and he no longer needed intubation. He was therefore transferred to the general ward and discharged from the hospital after his condition had stabilized. Dr. Wu Ping-Sheng explains that acute encephalitis is caused by a cytokine storm, which is a severe immune reaction that triggers systemic inflammation. Luckily, the team was able to control Yang Yang's symptoms and thereby prevent severe complications such as respiratory failure and shock.

Six-year-old Xuan Xuan (an alias) was another special case. Her Mom took care of her at home after she developed a high fever and tested positive for COVID. Two days later, the fever subsided, but Xuan Xuan suddenly



**Dr. Wu Ping-Sheng provides care for little patients in the dedicated COVID ward.**

experienced pain in her legs. She was unable to stand up and walk. Even touching the legs caused her unbearable pain. Initially, her Mom attributed the pain to a cramp and started to massage her legs. These massages slightly alleviated the pain, but she was still unable to stand or walk. Her Mom therefore scheduled a video consultation with Taipei Tzu Chi Hospital. As recommended by the doctor, she visited the emergency department to have her daughter admitted to the hospital. Dr. Wu Ping-Sheng detected when examining Xuan Xuan's blood sample that her CPK (creatine phosphokinase) value was 6900U/L, which is extremely high (the normal level is 300U/L). Xuan Xuan was therefore diagnosed with COVID-induced Rhabdomyolysis. In order to prevent further complication by acute renal failure, the team immediately initiated intravenous infusion of a large quantity of normal saline to rehydrate the

patient and boost her metabolism. On the following day, the pain in Xuan Xuan's legs had been greatly alleviated and she could get up and walk. Three days later, she had regained her vitality and could leave the hospital.

Back then, cases of COVID-induced Rhabdomyolysis were very rare in Taiwan and the local media extensively covered deaths caused by encephalitis in children. The pediatric team was

therefore under extreme psychological pressure, but they kept a calm head. In prudent response to the ever-changing virus, they analyzed the results of all existing studies and exhibited great patience in their meticulous care for every little patient.

### **Early Treatment of Severe Complications Detected in Video Consultations**

In the early stages of the Omicron outbreak, numerous clinical healthcare workers voiced their concern over the "unexpectedly rapid increase in cases" from a few dozen daily to hundreds, thousands, and tens of thousands of cases. In the face of the highly infectious Omicron variant, it was imperative to implement home care.

Telemedicine consultations represented a major task in this period. Physicians had to inquire and observe patients and determine which patients require treatment to ensure timely hospitalization solely by relying on their computer screen. However, after official launch of this policy, it turned out that this new medical care model was not as fast and convenient as expected. Due to the fact that Taipei Tzu Chi Hospital is an emergency responsibility hospital of New Taipei City Government and the number of confirmed cases within its jurisdiction was steadily increasing, the number of home care recipients reached several



**Dr. Cheng Ching-Feng, Deputy Superintendent of the hospital, conducts a video consultation with a little home care patient; communication with parents and inquiries are of paramount importance in this process.**

thousands a day.

Dr. Cheng Ching-Feng, a licensed pediatrician and Deputy Superintendent of the hospital, points out that the dedicated COVID wards cannot accommodate all COVID-positive children who have a fever. The medical team therefore schedules follow-up appointments for children in unstable condition in the afternoon of the same day or the morning of the following day. He recalls mentioning to a mother of a six-year-old boy during a follow-up consultation that her son had beautiful double-fold eyelids. This casual remark turned out to be crucial for the patient's timely treatment. His Mom told him that her son has had monolid eyes since birth, but his eyelids had suddenly turned double on the day of the consultation. After further questioning it turned out that the little boy hadn't eaten anything for 24 hours due to his high fever and his responses to the doctor's questions were very slow. Dr. Cheng therefore diagnosed him with dehydration combined with electrolyte imbalance. After this diagnosis, he made a prompt decision to arrange for hospitalization of the child.

It is evident that telemedicine consultations challenge the observation and judgment skills of physicians. Unforeseen circumstances such as sleep inertia and a sudden urge to go to the bathroom halfway through an appointment can result in consultation extensions. Despite these challenges,



**In addition to their clinical duties, the pediatric team also provides assistance in the administration of vaccines on school campuses.**

the pediatric team always conducts assessments in a circumspect manner to prevent oversights and delayed treatment. Dr. Cheng Ching-Feng recalls another case of a three-year-old child who had a high fever and did not respond to administration of a common antipyretic for children. Since this did not make any sense to Dr. Cheng, he further questioned the mother. It turned

out that she had given the child the wrong dosage. He calculated the right dosage based on the weight of the child and educated the mother on how to administer the drug. Two days later, the fever had subsided. Dr. Cheng points out that “parental anxiety mostly stems from a lack of understanding of the length and duration of the disease. Most families who have home care patients administer OTC medications. Careful questioning, attentive observation, real interactions, and a clear understanding of issues are therefore indispensable in the consultation process. A thorough analysis of drugs available in households and determination of medication use at home through questioning represent a key prerequisite of successful health education.

Dr. Cheng admits that he “feels like crying sometimes” since he has had the opportunity observe all kinds of families in the course of his physically and mentally taxing consultations over a period of more than two months. He confesses that “pediatricians are always extremely nervous when they have to face parents. Sometimes, I feel an urge to tell mothers to calm down, but I keep reminding myself that this is a consultation and that this advice could result in delayed treatment of sudden complications.” Frontline healthcare workers are forced to adjust their mindset and learn how to face a strange disease that was not featured in any textbook. The top

priority of epidemic prevention lies in “the identification of serious symptoms and timely treatment.”

### **Shocking Training Days for the Pediatric Team**

The Omicron outbreak can be described as a shocking “training day” program for pediatricians ranging from the initial fear of getting infected to familiarization with telemedicine appointments and concerns that patients could develop severe complications... Dr. Yu Chun-Hsien can’t remember how many times he fell asleep right after sitting in his chair after returning home from work. However, all these experiences have also made him realize that doctors can do so much.

Every child is most precious to its parents and every patient is a valuable life for frontline physicians. In the blink of an eye, the epidemic has abated and dedicated wards are successively closed down. Director Yu Chun-Hsien expresses his deep gratitude for the dedicated efforts and mutual support of his team over this period. He remarks spontaneously that “we have all chosen to become doctors and dedicate our lives to making contributions to saving lives, but in the course of my participation in this battle against this emerging infectious disease, I have come to the deep realization that my life is not in vain.”