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Ethnologies and Reflections

The Role of Chinese Medicine in Treating and Preventing COVID-19 in Hubei, China

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Abstract

The mobilization of Chinese medicine resources in the 2020 COVID-19 epidemic in Hubei, China, was part of the larger mobilization of society and multiple tiers of the healthcare system. In this article we describe how Chinese medicine teams organized treatment and prevention, how they conceptualized this treatment and evaluated the results, and what this may contribute to our understanding of how traditional medical traditions can be safely and effectively integrated into modern epidemic treatment and control.

Keywords

Chinese herbal medicine – COVID-19 – Wuhan – integrated medicine – Chinese-Western medicine

One of the new terms coined by the press during the COVID-19 public health crisis in China was “people going against the flow” or “people putting themselves in harm’s way to serve others” (*nixingzhe* 逆行者). This expression succinctly conveyed that while many others were traveling to their hometowns to celebrate the Lunar New Year holiday, medical personnel were going in the opposite direction toward a poorly understood, rapidly spreading viral epidemic. This was a small army of “angels in white coats” (*baiyi tianshi* 白衣天使), another popular epithet: 42,600 medical personnel from all over the country were sent to aid Hubei Province.

Since large-scale mobilizations of people and resources in a public health emergency can only be orchestrated by local and national government authorities, the campaign to fight the epidemic (*kangyi* 抗疫) was primarily top-down. The Chinese government spent an average of 23,000 RMB (approximately 3,550 USD) per person for medical treatment, with an average expenditure of 150,000 RMB (approximately 23,000 USD) for severe and critical cases. This included 3,000 people over the age of 80, and seven persons over 100 years of age. By May 31, 2020, a total of 1.3 billion RMB (approximately 200 million USD) had been spent on treatment and prevention by various government agencies.¹ Although we cannot take the exact set of measures that were implemented in China and apply them to other societies and healthcare systems without significant modifications, nevertheless how China has (and is) controlling the epidemic is worthy of study, and, frequently, praise.

However, evaluating the successes and failures requires that we also look at the bottom-up contributions of ordinary people. For example, Dr. Zhang Boli, the leader of the Chinese medicine teams sent to Hubei, described his surprise when he discovered that the volunteer who took him from his hotel to the hospital on his first day in Wuhan was from Heilongjiang, a province far to the north.² The man drove his own car the 2,300 kilometers (approx. 1,430 miles) to Wuhan, paying for his own gas, to help transport medical personnel around the city as all public transport was halted due to the lockdown. Tens of thousands of people in cities across the country volunteered at fever checkpoints, delivered meals and medicine to the elderly, performed throat swab tests, and supervised social distancing for the millions who were tested. In Wuhan, citizens would anonymously order meals and simply have them delivered to the hospitals in the city so that doctors and nurses would have food despite the strain on their kitchen canteen staff.³

1 State Council Information Office of the People's Republic of China 2020, 1–10.

2 Zhang 2020.

3 These are anecdotal reports from both official media and social media. The actual number of incidents is not possible to verify.

The mobilization of Chinese medicine resources was part of this larger mobilization of society and multiple tiers of the healthcare system. Below we describe how Chinese medicine teams organized treatment and prevention, how they conceptualized this treatment and evaluated the results, and what this may contribute to our understanding of how traditional medical traditions can be safely and effectively integrated into modern epidemic treatment and control.

Historical Precedents

As it became clear that the epidemic in Wuhan was going to be both severe and drawn out, discussions of the role of Traditional Chinese Medicine (TCM) in historical responses to epidemics in China began to appear on both scholarly and popular media platforms in China. For example, a five-part documentary news series on the role of Chinese medicine in fighting the epidemic in Hubei devoted a good deal of the first episode to reviewing how classical herbal formulas were developed and used in epidemic outbreaks throughout Chinese history. The National Administration of Traditional Chinese Medicine (NATCM)⁴ published a colorful scroll of cartoon drawings on its official social media site to bring this history to the public.⁵ The scroll begins in the Han dynasty and takes us up to the present day, reviewing the use of Chinese herbal medicine to treat smallpox, cholera, typhoid, Japanese encephalitis, bubonic plague, influenza, and severe acute respiratory syndrome (SARS). Before the influx of Western medicine in the nineteenth century, sophisticated theories and methods from within the tradition of medicine and medical literature in China were used to address these conditions.

Indeed, most of the major innovations in Chinese medicine were related to epidemic disease outbreaks, some of which can be clearly correlated with modern diseases while others remain obscure. Zhang Zhongjing, the author of the extremely influential *Treatise on Cold Damage* (*Shanghan lun* 傷寒論), wrote in his preface that the deaths of two thirds of his family from an epidemic disease inspired him to investigate the novel theories contained in his seminal work. The Cold Damage stream of thought is an important rubric for thinking about disease progression and the composition of herbal formulas up

4 Note that this government agency was previously called the “State Administration of Traditional Chinese Medicine.” Its role as the highest government body regulating TCM remains the same. The name change was simply part of a national campaign to correct archaic or misleading nomenclature in government agencies and documents.

5 NATCM 2020a.

to the present day, although only practitioners subscribing to some streams of thought follow it strictly and to the exclusion of other theories.

In the seventeenth century, the Warm Disease (*wenbing* 溫病) stream of thought and practice emerged through the writings of several physicians who were likewise confronting new outbreaks of disease that were correlated with specific regions and climates. Wu Youke's *Treatise on Warm Epidemics* (*Wenyi lun* 瘟疫論) and Wu Jutong's *Detailed Analysis of Warm Diseases* (*Wenbing tiaobian* 溫病條辨) were two of the most prominent works. Unlike the Cold Damage stream of thought—which looked at the transmission of disease through the six channels (three yin and three yang or *taiyang*, *yangming*, and so on) as a result of contraction or invasion of pathogens through the skin surface—the Warm Disease thinkers considered contagions to come through the mouth and nose. After entering the body, they travel either through the Triple Burner (inner organ and tissues in the trunk of the body) or through the Four Levels of *ying*, *qi*, *wei*, and *xue*.

In the COVID-19 epidemic, both the Cold Damage and Warm Disease streams and their herbal formulas were utilized. However, the teams sent to Wuhan concluded that the Warm Disease approach best fit the clinical picture and disease progression they saw on the front lines. Significantly, the presence of dampness was addressed with Warm Disease approaches that used cold medicinals with caution and added medicinals to transform dampness from the onset so that it would not further obstruct the lungs. It is no exaggeration to say that these clinical decisions, which were carried out by teams of Chinese medicine physicians who treated thousands of people, were potentially life-and-death decisions.

A Portrait of Chinese Medical Teams Treating COVID-19 Patients in Hubei

Chinese medicine teams were sent to Wuhan quite quickly. The city was locked down on January 23 and the members of the National Chinese Medicine Treatment Expert Group arrived between the 27th and the 30th. A total of 4,900 Chinese medicine personnel, accounting for about 13 percent of the total number of medical personnel, worked in Hubei for up to 100 days. Among the more than 70,000 patients diagnosed with the novel coronavirus nationwide, 91.5 percent used some form of Chinese medicine (CM). In Hubei Province the proportion was 90.6 percent.⁶ If one considers that in 2015 CM services

⁶ Ochs and Garran 2020, 23.

accounted for 15.7 percent of all medical services in China,⁷ we begin to see that this was a strong departure from the norm. This appears to be due to several factors. First, the free government distribution of herbal medicine and the incorporation of CM in hospital care increased access and credibility. Second, fear of the immediate and long-term consequences of a novel disease seems to have made people more willing to try CM approaches. Third, some informants reported that although they rarely use any form of CM in their adult lives, they recall being given decoctions as children both at home and in school, and their perception is that these were effective for preventing and ameliorating colds and influenza.

The five individuals selected to lead the National Steering Committee and Chinese Medicine Treatment Expert Group, which wrote the national treatment guidelines and led teams of physicians on the front lines, were chosen because they are recognized authorities within the institutions of CM. Their differences highlight the diversity of backgrounds that can be found even within state-supported institutions of CM and the competing visions of CM in China today.

Dr. Zhang Boli is the president of the Tianjin University of Traditional Chinese Medicine, a member of the Medical Reform Expert Advisory Committee of the State Council, and the chair of the Steering Committee on Teaching Chinese Medicine of the Ministry of Education. He has been engaged in clinical, educational, and scientific work in TCM for more than forty years. He specializes in the prevention and treatment of coronary heart disease, stroke, dementia, and other serious diseases with TCM. He was chosen due to his overall leadership in the field, his experience integrating CM into the care of critically ill patients, and his work treating SARS patients in the 2003 outbreak in Beijing.

Dr. Liu Qingquan is the president of Beijing Traditional Chinese Medicine Hospital, which is affiliated with Capital Medical University. He is the chair of the Cooperative Group of Key Specialties in Emergency Medicine of the NATCM and has been one of only a few pioneers and advocates of CM emergency medicine in the last thirty years.⁸ His work focuses on developing diagnosis and treatment guidelines for the application of CM to emerging infectious diseases, including dengue fever, Ebola, MERS (Middle East respiratory syndrome), and Zika. Liu treated patients in the isolation wards when SARS broke out in Beijing in 2003 and led research on CM and H1N1 in 2009. He is also well versed in the classical literature of TCM, and explicitly used arguments and strategies from it

⁷ State Council Information Office of the People's Republic of China 2016, 5.

⁸ Readers may be interested in his *Thirty Years of Chinese Medicine Clinical Emergency Medicine* (*Zhongyi jizhen lincuang sanshi nian*). See Liu Qingquan 2015.

in his work in Wuhan. During the COVID-19 outbreak, he was a member of the Central Steering Group, and deputy director of the National Chinese Medicine Treatment Expert Group. He began working in Wuhan on January 23 and spent eighty-two days treating patients, conducting research, and consulting on critical cases on the front lines.

Dr. Tong Xiaolin is perhaps the most traditionally trained of the five. He is a well-respected scholar of classical CM literature and was an apprentice of the legendary herbalist Zhu Liangchun, who was known for his insights and unusual uses of traditional materia medica. Tong is currently best known for his innovative theories and treatments for metabolic disorders. He previously treated SARS patients.

Dr. Huang Luqi is president of the China Academy of Chinese Medical Sciences. A molecular pharmacologist by training, he is an expert in research methodology and the pharmacology of Chinese medicinals.

Dr. Zhang Zhongde, like the others just mentioned, treated patients during the SARS epidemic and actually contracted the disease himself. He has spoken about how the experience of treating himself and using CM to recover completely deepened his own clinical practice. Dr. Zhang led a team of eighty-eight medical workers from Guangdong Provincial Chinese Medicine Hospital and worked with colleagues at multiple sites, treating over 1,000 cases.⁹

All of the teams were centrally coordinated by the National Chinese Medicine Treatment Expert Group, which met regularly to share experiences and discuss problems. Listing the locations and assignments of the various teams gives us a sense of what is meant by “integrated treatment.” The first team of CM personnel was put in charge of the forty-two beds in the Infectious Disease Ward of Wuhan Jin Yin Tan Hospital. The second team was responsible for three wards in the Hubei Integrated Chinese-Western Medicine hospital. The third team was responsible for managing the Jiang Xia Temporary Shelter Hospital (one of sixteen shelter hospitals set up in converted stadiums and community spaces in Wuhan) and providing CM services there. The fourth was sent to Thunder God Mountain Hospital (one of the hospitals featured in the media that was built out of prefabricated materials in ten days) to provide CM services.¹⁰

This list does not include the teams sent to work at community clinics and smaller hospitals in Hubei, but descriptions and data from some of these is discussed below through the work of Dr. Tong Xiaolin. The general manner in which patients were triaged is shown in Table 1.

9 See Zhang and Xu 2020, a monograph with sixty detailed case records.

10 Tong 2020, 212.

TABLE 1 Patient triage

Classification	Site assigned
Confirmed cases	Mild: sent to temporary shelter hospitals Serious: sent to designated hospitals
Four categories: fever, close contacts (with confirmed cases), suspected, and under observation	Quarantine sites

The guidelines and protocols issued by both the National Steering Committee¹¹ and provincial-level bureaus of health or CM bureaus were based on the four-fold classification of illness already determined by biomedical teams (mild, moderate, severe, and critical) in order to make the recommendations easier to implement when circumstances did not permit individualized formulas prescribed by well-trained CM physicians, the preferred method of treatment. Here, it is important to clarify how the various agencies created these guidelines and how they intended for them to be used.

Nine editions of the national guidelines have been issued as of October 2020 with each edition reflecting changes in the understanding of the disease itself and pharmaceutical drugs that appeared promising for treatment at the time of publication. The CM formulas were relatively stable by the third edition because they were based upon the “in the trenches” clinical experiences of the team members sent to Wuhan as well as data from many other provinces. At the behest of the CM team, an app was developed to gather data from physicians across twenty provinces that uploaded data from over 1,000 patients.¹² Symptoms, course of disease, and signs crucial for determining diagnosis and treatment principles in CM nosology, such as tongue images, were included. This information, along with onsite examinations of patients in Wuhan, was the basis for the TCM section of the “Diagnosis and Treatment Protocol for Novel Coronavirus Pneumonia.”

Their intention was to offer licensed CM physicians, including less experienced doctors, as well as biomedical doctors with no CM training, a safe and reasonable guide to prescribing herbal formulas for COVID-19 patients. Some colleagues have noted that they contain little that seasoned, educated practitioners could not come up with themselves through typical CM clinical

11 For an English translation, see Ochs and Garraan 2020, 109.
12 Zhang Boli 2020, 1.

reasoning. Although this may be true, they do offer a guide to how the disease typically develops, something that was both essential and unclear to doctors treating patients early in the epidemic. We will discuss the multiple modes of clinical reasoning behind the particular recommendations below.

Zhang Boli and the Jiang Xia Temporary Shelter Hospital

A total of sixteen sites were converted into temporary shelter hospitals in Wuhan. Dr. Zhang has stated many times that his first priority upon arriving in Wuhan was to triage and quarantine patients so that the virus would not be transmitted to uninfected patients. This practice, the team pointed out, existed long before the development of modern biomedicine. For example, the *Book of Jin* (*Jinshu* 晉書; revised in 648 CE) states that, “If the family of an official has had a seasonal illness, and more than three people have contracted it, he is forbidden from entering the Imperial Court for 100 days, even if he himself is not ill.”¹³ Since even the practice of quarantine can be placed squarely within the tradition of medicine in China before biomedicine, it is thus a simple matter to view this latest episode as a short chapter in the long book of treating epidemics with Chinese herbal medicine. Zhang, Liu, and others have emphasized in press conferences and articles for the general reader that prior to the twentieth century, CM was used to treat the over 352 epidemics recorded from the Han to the late Qing period. For them, those who find it unreasonable to include CM in the campaign to treat an acute, infectious disease are only revealing their lack of historical knowledge.

The temporary hospitals were set up to avoid having people quarantine at home, risking the infection of other family members, and to hospitalize asymptomatic patients, who would certainly strain an already overwrought healthcare system. Zhang Boli and his team participated in patient treatment at multiple hospital and clinic sites, but at the Jiang Xia Temporary Shelter Hospital they were entirely responsible for all aspects of patient care. Dr. Zhang summarized their experience as follows:

The Jiang Xia Temporary Shelter Hospital opened officially on February 14th, 2020 and closed on March 10, 2020, over the course of which we treated 564 people. Of these, 483 recovered and 68 were transferred to designated hospitals for policy reasons [i.e., the hospital closing because

13 The original quote is: “朝臣家有时疾，染有三人以上者，身虽无病，百日不得入宫。” Fang Xuanling 1980, 76.2009. Unless otherwise noted, all translations are our own.

it was no longer needed].... Overall, we had zero patients develop serious disease, zero cases re-test positive [after recovery and a negative test], and zero cases of infections among medical personnel. These were excellent results.¹⁴

The formula below is a combination and modification of several classical formulas.

Diffuse the Lung and Defeat Toxin Formula (*Xuanfei baidu fang* 宣肺败毒方)

sheng mahuang 生麻黄 (*Ephedra sinica*), *ku xingren* 苦杏仁 (*Prunus armeniaca*), *sheng shigao* 生石膏 (unprocessed Gypsum), *sheng yiyiren* 生薏苡仁 (*Coix lacryma-jobi*), *cangzhu* 苍术 (*Atractylodes lancea*), *huo-xiang* 藿香 (*Pogostemon cablin*), *qinghaocao* 青蒿草 (*Artemisia annua*), *huzhang* 虎杖 (*Reynoutria japonica*), *mabiancao* 马鞭草 (*Verbena officinalis*), *gan lugen* 干芦根 (*Phragmites communis*), *tinglizi* 葶苈子 (*Lepidium apetalum*), *juhong* 橘红 (*Citrus reticulata*), *sheng gancao* 生甘草 (*Glycyrrhiza spp.*)

Main actions: diffusing the lungs and transforming dampness; clearing heat and penetrating [pushing out] pathogens; and draining the lungs and resolving toxins. Suitable for moderate cases of COVID-19 with damp toxin constraining the lungs pattern.

Zhang summarized the three modes of reasoning that went into the decoction formula thus:

We can talk about what went into this formula. Not only does it have a basis in the [classical CM] medical literature, it also reflects our clinical experience. We also used technology including some evaluation done on data platforms, and we found two particularly useful medicinals. One is *huzhang* (*Reynoutria japonica*), which showed the strongest inhibition of this novel coronavirus. The second was *mabiancao* (*Verbena officinalis*) which had significant activity on inflammation in the small airways in the lung. So, we added these two medicinals into the formula. Therefore, this formula is based on a combination of classical literature, clinical experience, and modern pharmaceutical research.¹⁵

¹⁴ Ochs and Garrahan 2020, 49.

¹⁵ Ibid., 65.

Despite the workload and the conditions at the stadium converted into a hospital, an observational cohort study was conducted on a subset of patients at the Jiang Xia Temporary Shelter Hospital. A total of 280 patients were given Diffuse the Lungs and Defeat Toxins Formula (shown above),¹⁶ which was created by the Steering Group members, and the results were compared with a group that received only biomedical treatment at another hospital. The primary evaluative criterion was the number of cases that developed into serious disease. Dr. Zhang has pointed out that this was included as a “key criterion” in the World Health Organization (WHO) reports because of advocacy from the Steering Committee. At Jiang Xia no cases developed into serious disease, while at the other hospital in the study the rate was 9.7%.¹⁷

Using TCM under Epidemic Conditions

The patients in these large quarantine sites were treated as a group based on the nosological categories and their manifestations in the human body at that time and in that place.¹⁸ Dr. Zhang directly addresses the question that many practitioners ask regarding the lack of individualized treatment:¹⁹

When I was describing this a few days ago, however, someone criticized me, saying that Chinese medicine is based on giving treatment based on distinguishing patterns in individuals [i.e. using Chinese medicine diagnostic categories and principles]. “How can you give the same formula to a whole group of people?” they asked me. Ahhh! I told them that since they were not there on the ground, they don’t know what we were dealing with. There were tens of thousands of people! Even if I could actually do an intake and write a formula for each one, who would fill and cook these herbal prescriptions? The hospitals had already been emptied of all other patients and were only taking COVID-19 patients [and therefore were lacking the usual pharmacy personnel]. The [CM] pharmacies outside the hospitals were all closed. The herbal manufacturing companies that were helping could not possibly cook [decoct] individual formulas for us and where would we even get the herbs to cook? So, we did the only thing

16 Ibid., 66. To date, this has not been published in any medical journals.

17 This general trend (without any statistical evidence) is being reported anecdotally by our colleagues around the world and documented in individual case studies and case series.

18 See Lei 2014, 177–81, for a discussion of the problem of incorporating germ theory into CM in the 1940s.

19 For a discussion of the historical development of the scholar-physician prescribing individualized, custom formulas as the pinnacle of practice virtuosity, see Scheid 2013.

we could do. In ancient times, Chinese medicine doctors also cooked and distributed “great vats of herbal decoction” that everyone took. Because the cause of the disease was all the same and the symptoms were basically the same; also it is entirely possible to use one designated formula and give it to everyone.²⁰

Reporters have also asked Dr. Zhang, “Does your experience mean that Chinese medicine can only treat mild and moderate cases? Don’t these cases just get better on their own?”. He gave this response:

Scientists from both China and the UK have agreed that the time needed to reduce fevers and the time to get negative nucleic acid test results were not that significant in and of themselves. One or two days more or less would not make a significant difference in clinical outcomes. However, preventing mild cases from becoming serious cases was a very significant marker with real clinical importance. One aspect of this is that the cost of treatment once someone has developed serious disease is 30 or 40 times greater and, of course, the case fatality rate is much higher and treatment becomes much more difficult. For all these reasons, preventing mild and moderate cases from becoming serious cases was the most important goal that we wanted to achieve, and this was our marker of success or failure.²¹

The cohort study above and another described below are clear examples, taken from a “naturally occurring” comparison (i.e., CM was simply not available at the other hospitals) that shows the significant impact early intervention with CM can make on clinical outcomes. Skeptics may claim there were confounding factors, or that perhaps the biomedical treatment was substandard and therefore these results do not apply to developing countries. However, differences in outcomes certainly indicate that the possibility for saving lives is significant enough to warrant further study. Dr. Zhang elaborates on this point:

According to WHO reports, about 13% of people who become infected will develop serious disease, and 7% will become critical. In all of the temporary shelter hospitals, because we used Chinese medicine, only 2–5% of patients developed serious illness. This statistic is from the National Health Commission.²²

20 Ochs and Garran 2020, 47.

21 Ibid., 44.

22 Ibid., 49.

Tong Xiaolin and the “Wuchang Model”

Dr. Tong Xiaolin was assigned to the Wuchang district of Wuhan, where he oversaw the use of Chinese herbal medicine for prevention in a large population of people who may have been exposed. He describes the results both anecdotally and through an observational study.

Over 800,000 doses of the formula “Wuhan Anti-Epidemic Formula 1” was given to 50,000 people.²³ In the first few days of distribution, the Jiuzhou Tong Pharmaceutical Group worked all through the night to decoct 27,000 bags of [liquid] formula and local health officials described how the number of confirmed cases declined “precipitously” after the first 14 days of the distribution campaign.²⁴

Our treatment was formulated for the special conditions we were dealing with in Wuhan. The large number of patients was much greater than the capacity of the hospitals. The pressure at the community-level and the hospital-level of the healthcare system was tremendous. Resources were stretched to the limits.²⁵

Wuhan Formula 1 (*Wuhan yihao fang* 武汉一号方)

Sovereign: Treat the Membrane Source—*jiao binglang* 焦槟榔 (scorched *Arecae catechu*); *wei caoguo* 煨草果 (roasted *Amomum tsao-ko*); *houpo* 厚朴 (*Magnolia officinalis*).

Minister: Treat Interior and Exterior—Diffuse lung and disperse cold—*mahuang* 麻黄 (*Ephedra sinensis*); *shigao* 石膏 (*Gypsum*); *qiang-huo* 羌活 (*Notopterygium incisum*); *sheng jiang* 生姜 (fresh *Zingiberis officinalis*).

Minister: Build the Spleen and Expel Dampness

Build the Spleen—*jiao shanzha* 焦山楂 (fermented *Crataegus pinnatifida*); *jiao maiya* 焦麦芽 (fermented *Hordeum vulgare*); *sheng jiang* 生姜 (fresh *Zingiberis officinalis*).

Expel Dampness—transform dampness: *huoxiang* 藿香 (*Pogostemon cablin*); dry dampness: *cangzhu* 苍术 (*Atractylodes lancea*); *houpo* 厚朴 (*Magnolia officinalis*); percolate dampness: *sheng baizhu* 生白术

²³ Tong Xiaolin 2020, 212.

²⁴ Ibid., 213.

²⁵ Ochs and Garran 2020, 77.

(*Atractylodes macrocephala*); *fuling* 茯苓 (*Poria cocos*); disinhibit dampness: *tinglizi* 葶苈子 (*Lepidium apetalum*).

Assistant: Treat Collateral (luo) Toxin—*guanzhong* 贯众 (*Cyrtomium* sp.); *xuchangqing* 徐长卿 (*Cynanchus paniculatum*); *dilong* 地龙 (*Pheretima* sp.).

Envoy: Enter the Membrane Source—*tinglizi* 葶苈子 (*Lepidium apetalum*) (directly reaches the membrane source; separates and disperses to lead out; drains the lung and calms wheezing; disinhibits water and disperse swelling).

For pronounced fever, add modification 1: *mahuang* 麻黄 (*Ephedra sinensis*) 6 g; *lugen* 芦根 (*Phragmites communis*) 60 g; *sheng shigao* 生石膏 (unprocessed Gypsum) 15 g; *chaihu* 柴胡 (*Bupleurum* sp.) 15 g.

For severe cough and asthma, add modification 2: *lianqiao* 连翘 (*Forsythia suspensa*) 15 g; *baibu* 百部 (*Stemona japonica*) 15 g; *tinglizi* 葶苈子 (*Lepidium apetalum*) 15 g; *xianhecao* 仙鹤草 (*Agrimonia pilosa*) 15 g; *zhi ziwan* 炙紫菀 (honey mix-fried *Aster tataricus*) 15 g.

For loss of appetite, nausea and vomiting, or diarrhea, add modification 3: *chao laifuzi* 炒莱菔子 (stir-fried *Raphanus sativus*) 15 g; *chenpi* 陈皮 (*Citrus reticulata*) 15 g; *jiang banxia* 姜半夏 (ginger processed *Pinellia ternata*) 15 g; *huanglian* 黄连 (*Coptis chinensis*) 6 g; *pao jiang* 炮姜 (blast-fried *Zingiberis officinalis*) 9 g.

For shortness of breath and fatigue, add modification 4: *huangqi* 黄芪 (*Astragalus mongolicus*) 30 g; *dangshen* 党参 (*Codonopsis pinosula*) 15 g; *danshen* 丹参 (*Salvia miltiorrhiza*) 15 g; *chao baizhu* 炒白术 (stir-fried *Atractylodes macrocephala*) 15 g; *gan jiang* 干姜 (dry *Zingiberis officinalis*) 9 g; *beishashen* 北沙参 (*Glehnia littoralis*) 30 g.

Dr. Tong supervised an observational study that demonstrated the following:

The “Wuchang model” played a crucial role in community prevention and control. We collected data to better understand what was effective and what was not. An observational study of 721 cases²⁶ showed significant differences in rates of development of serious disease. Out of 430 patients with mild COVID-19 that took Cold-Damp Epidemic Formula,

26 The results of this research study have not yet been published. It was jointly conducted by Dr. Tong Xiaolin and his team from the Guang'anmen Chinese Medicine Hospital (China Academy of Chinese Medical Science Affiliated Hospital), the Wuchang district government, the Hubei Province Chinese Medicine Hospital, Dr. Liu Baoyan's team from China Academy of Chinese Medical Science, and Dr. Liu Janping's team from Beijing University of Chinese Medicine.

none of these patients developed serious disease. However, of the 291 cases in the control group, 6.8% did develop serious disease.²⁷

The scale and the uneven numbers in this study may make it intriguing but less than convincing for many readers. We discuss below the complexities of creating an evidence base for showing the efficacy of CM for preventing infectious diseases. This is a problem that has troubled researchers for many decades. Here we simply note that recent COVID-19 vaccine trials were also designed to measure decreases in the severity of disease and mortality rather than rates of actually preventing transmission. Although this seems counterintuitive to non-specialists, current global conditions only allow clinical trials that can answer the question of mitigation rather than the true prevention of transmission.

Treatment of Severe and Critical Cases

Zhang Boli, Liu Qingquan, and Tong Xiaolin worked together very closely on the Steering Committee set up to consult on critical cases in Wuhan. Zhang Zhongde led the team in Guangzhou and later published a book describing sixty cases treated with integrated medicine that included photographs of tongues, pulse diagnoses, and the medicinal formulas given to patients. Zhang describes the treatment of severe cases in designated hospitals:

For severely ill patients we used integrated Chinese-Western medicine. Many people have asked us how the two can be integrated, but actually the two forms of medicine worked together very harmoniously when we were treating severely ill patients. This is because we were all focused on saving another's life, so whomever had a method or some ability to help would simply do what was needed to solve the problem at hand. We used whatever could save their lives and control the disease. Faced with life or death, what department you belonged to or the views you held about different forms of medicine were not important. This time we worked together very well.²⁸

Severe and critical cases are even more difficult to enroll in clinical studies for logistical, ethical, and clinical reasons. These were the cases, Dr. Liu Qingquan told us, that required “a different decoction morning, noon, and night.” Clinicians around the globe have reported on the rapid onset and changes that

²⁷ Ochs and Garran 2020, 78.

²⁸ *Ibid.*, 50.

can occur in COVID-19 patients and this is exactly what was seen in the wards in Wuhan. Nevertheless, at least one observational study was documented:

We also worked at Wuhan Integrated Chinese and Western Medicine Hospital, a large hospital with a critical care unit. At this hospital, 1476 patients were hospitalized, and of these 662 patients were serious or critical. In an observational study, 484 cases were in the traditional Chinese medicine decoction group and 178 cases were in the non-traditional Chinese medicine decoction group. A total of 71 patients died, 15 cases in the traditional Chinese medicine decoction group and 56 cases in the non-traditional Chinese medicine decoction group. Therefore, we concluded that the risk of death for patients taking traditional Chinese medicine decreased by 87.7%.²⁹

In interviews and talks, the three doctors explained the role of CM in the intensive care units and isolation wards. Ventilators, extracorporeal membrane oxygenation (life support machines), and sometimes anti-inflammatory drugs or muscle relaxers were used to keep patients alive, but when these measures failed herbal medicine and sometimes acupuncture were the complementary measures that shifted clinical outcomes and saved lives. Zhang Boli identified four situations in which CM played this role: (1) when oxygen saturation levels were inadequate or unstable despite machine ventilation, Pulse Engendering Injection (*Shengmai jing* 生脉净) or a decoction of ginseng only, stabilized levels very quickly; (2) when inflammation in the lungs was not well controlled, formulas that clear heat and reduce toxins were able to reduce inflammation; (3) when patients experienced a cytokine storm with decreased breathing, Blood Cleansing Injection (*Xuebi jing* 血必净) restored adequate breathing; (4) when patients were breathing out of sync with the ventilator, muscle relaxers were given. But relaxing the diaphragm also caused abdominal bloating, which paradoxically inhibited breathing. The formula Major Order the Qi Decoction (*Da chengqi tang* 大承气汤) was given orally or intravenously and the breathing would quickly synchronize.

Which system of medicine or which doctor gets “credit” for saving or curing are generally not questions that patients or their families are particularly interested in, for obvious reasons. Moreover, as many medical team members emphasized, integrated treatments were given in dynamic and often life-threatening situations that required decisive action from seasoned medical staff, making parsing out “what worked” difficult at best.

29 Ibid., 81–82.

Clinical and Epidemiological Reality: Prevention and Treatment as a Continuous Spectrum

The COVID-19 epidemic was not the first time in recent history that individuals, institutions, and government policies were intentionally aligned to utilize CM as a significant component of a public health effort to combat an infectious disease. Chinese herbal medicine and other modalities were used to treat patients in successive epidemics, including cholera, smallpox, meningitis, Japanese encephalitis, influenza A, SARS, and avian flu (H1N1). However, even in comparison to the most recent epidemics, the 2003 SARS crisis and the 2006 avian influenza outbreak, communities and institutions of CM were better prepared to respond in terms of providing effective clinical medicine and documenting these experiences to create an evidence base for CM. All of the leaders of the CM teams sent to Wuhan, Hubei, and Guangzhou had extensive experience participating in collaborative, scientific research on CM treatments for acute and chronic diseases. These physicians have decades of clinical experience, are steeped in the traditional literature, and participated on the front lines in prior public health emergencies.

Given the similarities in their professional and intellectual positions within state-sponsored “Chinese-Western integrated medicine” institutions it is striking to hear the nuanced differences in the explanations and clinical reasoning offered by the team leaders. These seasoned physicians are all “polyglot” or practice “medical bilingualism” with respect to their ability to easily slide between categories and concepts that in fact are based on divergent epistemological commitments. At the same time, these explanations “opened up unresolved clinical debates artificially closed in the standardization of the curriculum in the 1950s and 60s.”³⁰

For example, Liu Qingquan describes how a change in the prevalence of strains of influenza completely changed the manifestation of patterns and the disease dynamic from a CM perspective. He smoothly relates the two sets of disease causation, viruses, and Cold Damage or Warm Disease, without reducing one to the other, and so maintains the significance and “reality” of disease causation in CM.

Once, in 2010, I saw very clearly this shift [from Cold Damage to Warm Disease]. In December of 2009 there was a small outbreak of seasonal

30 Hanson 2011, 166. Here, Hanson is speaking of the participation of Chinese medicine in the treatment of patients in the SARS epidemic, but it applies equally as well to the discourse and policy changes that have occurred due to the COVID-19 experience.

influenza, which was actually H₃N₂, and patients presented with clear clinical signs. They would come in with fever, aversion to cold and body aches. From our perspective this was “wind-cold heat effusion (fever)” and this was caused by a wind-cold [pathogen]. After a few days, beginning around Jan 1, 2010, there was a sudden change in the influenza patients coming in to the clinic and they had a high fever with no chills or aversion to cold at all. Because I had previously treated patients during the H₁N₁ outbreak, I felt that the virus causing the influenza had changed. This turned out to be true. [Research later revealed that] in December, 70% of infections were due to H₃N₂ and only 23% were H₁N₁. Within just a few days, in fact, the proportion of H₁N₁ infections had skyrocketed from 2.3% to 23%, and then quickly jumped to 60% and up to 70% or more. The type of disease changed and therefore so did the clinical characteristics. The first wave had fever, body aches and aversion to cold, the latter wave had fever, body aches and no aversion to cold. The first wave was cold damage. What was the second? Warm disease. The two were quite different.³¹

Comparisons with Role of CM in the Japanese Encephalitis and SARS Epidemics

One of the best-known CM doctors in Beijing, Lu Zhizheng, who is 100 years old at the time of this writing (born December 1920), published a piece on May 13, 2020, reflecting upon the outbreak of Japanese encephalitis in Shijiazhuang (a city about 300 km south of Beijing) in 1954.³² He was one of three members of a team designated by the Ministry of Health to investigate the effectiveness of Chinese herbal medicine treatment during the outbreak in that city. It is striking to see the parallels with the recent epidemic of COVID-19. In both cases, CM utilization was high (over 90%) but was rarely used exclusively. A small set of cases that were only treated with CM became a key factor in the analysis of the fact-finding mission in 1954. Then, as now, this evidence, combined with retrospective comparisons of cohorts that used only biomedical treatments, were used to show the efficacy of CM. At that time, there were no effective drugs or other treatments for Japanese encephalitis, and biomedicine used a variety of means: Lu tells us of treatments such as ice pillows and cold-water enemas to bring down the high fevers in an attempt to prevent brain damage. CM stood out as having a rational and systematic approach, despite being denied the designation “scientific.”

³¹ Liu Qingquan 2020, 5.

³² Lu Zhizheng 2020, 3.

Eric Karchmer gives us another example from the 2003 SARS outbreak that highlights the situation doctors faced as they treated patients in the middle of an epidemic when triage and prompt confirmation of a biomedical diagnosis was not always possible:

In a review of the 103 SARS patients admitted to the Guangdong Provincial Hospital of Chinese Medicine from January to April 2003, researchers found that 7 had died, a mortality rate of 6.79% that compares quite favorably to other epidemic areas where the rate was as high as 15 percent. Deng Tietao insisted that these statistics, although notable, do not tell the whole story, because they omit all the patients with high fevers who were cured by timely herbal medicine treatments before the disease progressed to a stage where it could be positively identified. They also fail to recognize that there were no cases of SARS among hospital staff, who all took Chinese herbal medicine prophylactically, thus highlighting another presumed advantage of CM—its preventive emphasis.³³

The data reviewed above and our discussion of the underlying problem of demarcating “prevention” and “treatment” are important starting points for evaluating the efficacy of CM in Hubei in the 2020 COVID-19 epidemic. The studies above suggest that early intervention at the population level may prevent transmission as measured by the number of people who ultimately get a positive nucleic acid test. It is reasonable to assume that some of these people had been exposed but were able to mount an effective immune defense with the aid of Chinese medicinals that either inhibited the virus at some stage of replication or increased the responses of the body’s own immune system. These types of claims must be validated through accepted scientific methods before they can be translated into standard, biomedical clinical practice. Moreover, even if such claims were validated for particular, single medicinals, the actual process of taking traditional medicinal substances, extracting them efficiently, and developing them into viable pharmaceutical drugs requires tremendous resources. The paucity of successful examples from many decades of research suggests that this is not a promising line of reasoning.

The evidence above for preventing the development of severe disease in patients who already have mild or moderate symptoms is limited by any standards. The studies cited above only include a few hundred cases; however, the outcomes are statistically significant and the methods are broadly acceptable.

33 Karchmer 2015, 210–11.

The same can be said for the decreases in mortality when Chinese and biomedicine are combined to treat severe and critical cases.

We hope that more data on clinical outcomes, even if from retrospective studies, will gradually lead to some moderate expansion of the criteria for evidence-based medicine. In fact, both forms of medicine, from within their own respective paradigms, accept a combination of evidence from the past and clinical experience as best clinical practice.

Future Impact

Over the last seventy years, state influence and the larger trajectory of its political, social, and economic goals have significantly determined the status of CM and the resources available for its “development.” Scholars generally characterize the period since 1989 by the state policies that have aimed to shape and promote CM as a set of ideas and practices that can be integrated into the techno-scientific networks of the global health care system. Over the last five years, we increasingly see that CM is lauded by the highest levels of government as an indispensable part of the cultural heritage of China and a potential “calling card” for introducing Chinese culture in general to other countries. We see recent events and documents as a continuation of these processes, even as we seem to be on the cusp of new changes that may go beyond previous modes of institutional integration.

Although the specific impact of the use of CM to treat and prevent disease caused by the coronavirus in 2020 will only become clear over time, we feel confident that future historical analysis will confirm that this is a significant turning point for CM in China. The high rates of utilization, the small but solid body of evidence regarding its efficacy, and the increased awareness in the scientific community and among the public are already having a positive impact upon the development of the field generally.

The social, political, and cultural dimensions of the “Chinese medicine battle against the epidemic” deserve multiple articles; however, we would like to mention some recent events and officially issued policies and laws that arguably encapsulate what is at stake for the state, official institutions of CM, and for more informal networks of licensed and unlicensed CM practitioners.

On June 11, 2020, the Medal of the Republic (also awarded to Tu Youyou for her Nobel Prize work on artemisinin) was awarded to Dr. Zhong Nanshan, a respiratory specialist who was the official government team leader and spokesperson on the coronavirus crisis. Prior to the official announcement, a list of

four candidates was made public that included Dr. Zhang Boli, a very public figure who is frequently interviewed and quoted. He has endeared himself to the public with his simple but authoritative explanations, the poems he wrote during the epidemic, and because he cried on television when asked to describe the situation when he first arrived in Wuhan in January. Even when he testified at the so-called Two Sessions (the joint convening of the National People's Conference and the Chinese People's Political Consultative Conference) attended by the Party leadership and broadcast on national television, he fumbled with his pens and glasses, fighting back the tears as he reported on the early deaths and the exhaustion and desperation of doctors and nurses he witnessed.

In those few days between the list being publicized and the announcement, there was robust debate about the relative merits of Dr. Zhong and Dr. Zhang on many social media platforms. One such piece, which was viewed over 100,000 times in the ten hours before it was censored and removed, claimed that Zhong Nanshan was not worthy of this honor because he did not work on the front lines, did not contribute any original treatment or research ideas, and because he opposed integrated Chinese-Western medicine. And, he had even once made the claim that the temporary shelter hospitals, which were the primary venues for CM treatment, were effective only because they quarantined people. On another level, posters and commenters were testing the limits of the perfunctory and symbolic claims of the state that it accepts public opinion. One post included a recording and a transcript of a call made to the number designated to record public opinion on the awards. After multiple unsuccessful attempts to reach someone, an employee eventually answered and the caller stated his opinion, repeatedly asking if statistics on such calls were actually being recorded. He was assured that they were. The caller offered no commentary beyond the transcript because none was needed. His point was that, although he was calling, he was less than confident that his opinion was being recorded and that his call, along with others, would hold any sway at all over those responsible for the decision. This highlights the complex relationship between the CM community and the state, with some stakeholders acting at the intersection of state policy and economic support, patriotism, and public resistance to government control. Dr. Zhang was ultimately honored with a "Hero of the People" award with great pomp and circumstance as a motorcade led him to the Great Hall of the People to be awarded by Xi Jinping himself on national television. In this instance, both government and public sentiment seem to be in close accord.

Perhaps we can get a sense of what the future holds by analyzing the statements of the CM leadership that spoke at the Two Meetings of the Party and the State Council on May 20, 2020. Zhang Boli, on this and many other

occasions, discussed how the efficacy of CM is quite clear from the perspective of clinicians, despite the fact that this is often referred to as anecdotal evidence or simply a case series within scientific communities that deem randomized, controlled trials (RCT) to be the only valid form of evidence for clinical efficacy. He respects the dominance of the RCT but also argues for expanding research criteria and methodology to more accurately assess the clinical efficacy of CM. Dr. Zhang stated that he looks forward to moving beyond “integration” (*jiehe* 结合) to “using each complete whole side by side” (*zhenghe* 整合).³⁴ He has spent his career advocating for traditional diagnosis and the value of fundamental concepts of CM. At the same time, he has extensive experience teaching non-Chinese students, which presumably informed his statements in response to the fervor to “spread Chinese medicine around the globe” ignited by the epidemic, admonishing the community to remember that “globalization cannot be forced, but must be based on the actual needs of others.”³⁵

The globalization of CM has not been and will not be characterized by linear processes, and stakeholders other than the Chinese government and its institutions have significant influence on the transmission and acceptance of CM. Certainly, both the profession and the educational systems that support it, as well as the industries built around goods and services related to CM, have goals that are not always in line with the goals of the Chinese state. In short, state influence on CM has been “decisive but not hegemonic.”³⁶

Tong Xiaolin’s assessment was as follows:

I personally experienced this global pandemic, which is something that only occurs once every hundred years, and I can proudly say that our Chinese medicine passed this one-hundred year test. If we recognize that two hundred years of Chinese medicine’s encounter with Western medicine, fifty years of Chinese-Western Integrated Medicine, the division of Chinese medicine into distinct “departments”, and other changes brought about greater changes than were seen in the previous 1,000 years prior; then we can imagine how the recent participation in the “epidemic fight” will be a major turning point in that history.³⁷

Changes in policy and law seem to support Dr. Tong’s conclusions. President Xi Jinping himself, writing in the journal *Seeking Truth* (*Qishi* 求是), explained the Party directive to include CM in more substantial ways in public health

34 Xinhua News Agency 2020, 4.

35 Ibid.

36 Scheid 2000, 10.

37 Ochs and Garra 2020, 25.

systems and initiatives.³⁸ The NATCM has issued guidelines for establishing and managing “Chinese classical medicine hospital wards” within CM hospitals that will treat “acute, serious, critical, and difficult diseases” using CM as the primary modality.³⁹ The Ministry of Education and the State Council have jointly called for increasing education in the classical literature of CM, creating CM emergency medicine departments, and training people who can “preserve what is authentic while innovating.”⁴⁰

Most recently, a press conference of the Office of Information of the State Council emphasized that CM is useful for treating and preventing influenza and should be fully utilized during this upcoming flu season.⁴¹ This was followed by the public announcement on October 9, 2020, of the “Law on the Prevention and Treatment of Infectious Diseases in the People’s Republic of China” by the Ministry of Health. As is customary, public opinion is sought before it is discussed by the State Council. The primary change thus far would be to include Infectious Disease Departments in CM hospitals and remove some of the legal and liability issues currently preventing ordinary CM doctors from treating infectious diseases.

International Impact

We can detect two trends in the recent globalization of CM: market-driven developments and state-driven projects. By the first, we are primarily referring to the spread of CM in developed countries where it is driven by consumer demand and other local cultural, economic, and political factors. Transmission in North America, Europe, and Latin America already has a history of many decades and has been influenced by Chinese immigrants and other bilingual speakers with direct connections to mainland China. State-driven projects include a plan to fund twelve centers of CM in countries along the One Belt One Road initiative, such as Turkmenistan, Uzbekistan, Russia, Ukraine, and Hungary, as well as ongoing medical aid which provides CM to African nations. Both aspects can also be distinguished in the use of Chinese herbal medicine to treat and prevent COVID-19. Many private CM clinics in Europe, North America, Africa, Australia, and Latin America are treating COVID-19 patients

38 Xi Jinping 2020, 2.

39 NATCMB 2020, 1–2.

40 These are the three key points in the document jointly issued in August, 2020. NATCM 2020b, 2.

41 State Health Commission 2020, 1.

on a small scale. At the same time, Chinese government agencies, private organizations, and even individuals have sent prepared Chinese herbal formulas around the world.

We are convinced that CM was a significant and effective part of the clinical and epidemiological response to the novel coronavirus epidemic in Wuhan. This most likely will be a turning point for the status of CM within China. However, the current social, political, and economic tensions between China and many other countries do not bode well for the expansion of CM into new geographical or medical territories. The objective evaluation of the role of CM in preventing and treating COVID-19 by historians, anthropologists, and medical professionals may contribute to building bridges between competing narratives that impact the entire global community. We continue to hope that a positive outcome of this global pandemic will be an increased awareness of the impact of culture and society on disease outcomes, and of the urgent need to cooperate even when there is disagreement about best medical practices.

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