

# CHINESE HERBAL MEDICINE AND THE NOVEL H1N1 VIRUS

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There is much concern about the possibility of an H1N1 influenza pandemic this winter. Though many key clinical and epidemiological questions remain, overall, we know more now than we did in the spring of 2009 about the virus. The World Health Organization (WHO) has tracked the virus around the world since the original cases were diagnosed in April of 2009. During the winter months in the Southern Hemisphere (June-September) the incidence of infection was marked by a sharp rise early in the season with fewer numbers being reported later in the season.<sup>i</sup> This could be due to the nature of the virus or due to greater human preparation in midwinter. If this surveillance is an indication of what to expect of H1N1 activity in the Northern Hemisphere this winter, then as practitioners, we should be prepared for the possibility of an early flu season. Flu season in North America normally runs from October to March, with the peak months usually occurring in November and February. If the pattern of the Southern Hemisphere is repeated here this winter, practitioners need to be prepared to treat patients with H1N1 even during the warmer months of September, October, April, and May.

Historically, Chinese herbal medicine has been very effective against viral infections, even new strains. During the SARS outbreak in 2003, Chinese herbs were used to treat infected patients and protect the health care professionals from contracting the virus.<sup>ii</sup> There is much that we can do as Chinese herbal medicine practitioners to help our patients before, during, and after infection. But before a discussion of treatment options, it is essential that we understand the virus itself and the current epidemiological information.

## **Testing and Reporting**

Due to the resource-intensive nature of the task, as of July 2009, there is no longer an obligation from the WHO or CDC to test and report every suspected case.<sup>iii</sup> Instead of reporting probable novel H1N1 flu cases, the CDC has transitioned to using its traditional flu surveillance systems to track the progress of both the novel H1N1 flu pandemic and seasonal influenza.<sup>iv</sup> This marks a major change in our clinical procedure regarding this epidemiological surveillance. What this means to Oriental Medicine clinicians is this: we treat what we find according to the pattern presentation. (See "OM Treatment Options" below.) If the patient has a fever of over 100.5F/38.0C, with cough and a resting pulse rate of over 90 BPM, and if symptoms do not stabilize or improve within 24 hours, we should refer them for immediate testing through their local health department. If the patient is not in the critical phase and is going to remain at home, make sure the family or home caregivers are familiar with the established guidelines. You can print these guidelines for your patients from the CDC website. The paper is called "Interim Guidance for H1N1 Flu (Swine Flu): Taking care of a Sick Person in Your Home."<sup>v</sup>

## **Signs and Symptoms**

The Centers for Disease Control (CDC) states that the symptoms for H1N1 flu are to be considered "similar to regular human seasonal influenza." Patients with uncomplicated disease due to H1N1 infection have experienced fever, chills, headache, and upper respiratory tract symptoms, including cough, sore throat, rhinorrhea, shortness of breath. Also frequently reported symptoms are myalgias, arthralgias, and generalized fatigue. Some people with H1N1 flu also have reported gastrointestinal symptoms such as nausea, vomiting, and diarrhea. Of all these signs and symptoms, the two most statistically significant are fever and cough. Many patients do not experience severe or pronounced cough. Do not let an apparently minor cough deter you from treating the virus as influenza. The cough need not be severe or pronounced to suspect H1N1 infection, only present.

## **Transmission and Exposure Precautions**

The available data indicates that this virus is transmitted in ways similar to other influenza viruses. Seasonal human influenza viruses are thought to spread from person to person primarily through respiratory droplets ejected during sneezing or coughing. Transmission via these large-particle droplets requires close contact between source and recipient persons because droplets cannot remain suspended in the air for long (< 7 seconds) and generally travel only a short distance (< 6 feet). Close contact is considered to be within about a 6 foot radius of an infected person. Contact with contaminated surfaces is another probable source of transmission. Tests show that the virus remains active on hard surfaces for about 2 hours, but under certain (unspecified) conditions, up to 8 hours. This is good news for the workplace because it means that in a 9-5 office setting, all H1N1 activity should die out overnight.

All respiratory secretions and bodily fluids of novel H1N1 cases should be considered potentially infectious. Universal precautions should be strictly adhered to. (See CDC paper on "H1N1: Taking Care of Sick Persons.") Frequent hand washing is essential; finger contact to one's own face should be avoided unless hands are freshly washed. If these precautions are taken, there is no reason, according to the CDC, for family members or clinicians to avoid contact with the public while caring for infected persons.

## **Pathogenesis, Contagion, and Isolation Period**

Unlike the common cold, which attaches to the adenoids, the influenza virus attaches to the lung tissue itself. The lungs become inflamed and the body reacts with "flu-like symptoms." Incubation for the H1N1 virus appears to be 1-4 days after exposure, with a possibility of being up to 7 days. Normally, an adult is contagious for about 24 hours after the fever has dropped below 100F/38C (without the use of fever-reducing medicines.) Children can be contagious up to one week after the fever has dispersed.

### Recent Discoveries

The WHO has determined that the novel H1N1 virus has little or no resistance to neuraminidase inhibitors.<sup>vi</sup> Neuraminidase inhibitors interfere with virus's ability to replicate. Since replication of influenza virus in the respiratory tract reaches its peak between 24 and 72 hours after the onset of the illness, early treatment with neuraminidase inhibitors can be very effective. A handful of Chinese herbs have been shown to have strong neuraminidase inhibitory effects, most notably, sophora root (*ku shen*)<sup>vii</sup> and isatis root (*ban lan gen*).<sup>viii</sup> For these substances to be effective, it is important that they are administered at the right phase and with consideration to the patient's pattern. They will be more effective when used in conjunction with other herbs in an appropriately matched formula. (See next section.)

### ORIENTAL MEDICINE TREATMENT OPTIONS FOR NOVEL H1N1 INFLUENZA

It is best to break down treatment options into phases. What works during one phase will be minimally effective in another, and in some cases counterproductive. The three phases are: *Prevention Phase*, *Initial Exposure Phase*, and *Fully Engaged Phase*.

#### PREVENTION PHASE STRATEGIES

Prior to exposure, it is possible and recommended to support the immune system in order to prevent the virus of a future exposure from forming full attachment. A strong immune system is characterized by a firm and well-regulated exterior. The *wei* (defensive) qi can be supported in two ways with herbal medicine: directly and through the *zheng* qi. In the young and the strong, direct support is usually preferable. In patients over age 40 or patients who have weaker immune systems, it is often preferable to support not only the *wei* qi, but the *zheng* qi as well. The Prevention Phase formulas are effective prior to the onset of symptoms. These formulas, if administered after the onset of symptoms can strengthen the pathogen as well as adversely intensify the body's response.

#### Prevention Phase Formulas

**Five Mushroom Formula** (*Wu Gu Fang*). The power certain mushrooms possess to kill viruses and support the immune system is well documented. The mushrooms in **Five Mushroom Formula** are among the strongest known and have a specific clearing and strengthening action upon the lung. Any age or constitution can benefit from their potent healing properties. **Five Mushroom Formula** is the best of this group for short notice application. That is, if the patient did not prepare weeks in advance, **Five Mushroom Formula** can provide quick defense for air travel. Because it is both tonifying and can kill pathogens, it is safe and effective to take throughout the season as a preventative and is the only formula from this category that can be used in the Initial Exposure Phase.

**Astragalus and Ligustrum Formula** (*Huang Qi Dong Qing Pian*) is a modern *fuzheng* therapy formula. This formula is ideal for elderly patients or those with weakened immune systems. Many of the ingredients are classified in the West as adaptogens. Its OM actions include strengthening spleen and *wei* qi, nourishing the kidney and blood, and retaining essence. Elderly and weak patients should be placed on this formula

either throughout the year or at least several weeks prior to the beginning of "flu season."

**Astragalus Formula** (*Huang Qi Jian Zhong Tang*) also directly supports the *wei* qi. It is designed for patients with weak spleen qi. It is an excellent choice for pediatrics during the prevention phase, but anyone with weak spleen qi can benefit from this formula. **Astragalus Formula** tastes good and can mixed in with other formulas to improve their taste. Combining **Astragalus Formula** with other formulas can also help a person with weak digestion to absorb the main formula.

**Jade Windscreen Formula** (*Yu Ping Feng San*) directly supports the *wei* qi, supports immune function, and firms up the exterior against invasion. It strengthens the *wei* qi over time. Administration should begin 6-10 weeks before the anticipated need arises, then continued throughout the period of vulnerability. **Jade Windscreen Formula** is generally safe even for children but can raise body temperature if taken during an invasion of heat. In rare cases, it can also raise blood pressure.

**Ginseng Endurance Formula** (*Ren Shen Pian*). Originally designed to enhance athletic performance, this formula is quite effective for either the direct support of the *wei* qi or support through the *zheng* qi. Nearly every ingredient in this formula is classified as an adaptogen. It supports *zheng* qi, *wei* qi, kidney, and blood. Among the five formulas that we recommend for the Prevention Phase, **Ginseng Endurance Formula** is the most effective for patients who suffer from real exhaustion.

#### INITIAL EXPOSURE PHASE PATHOPHYSIOLOGY

Immediately after exposure, there is a small window of time to kill the virus before it has a chance to imbed itself in the lung tissue, where it is protected while it replicates. The Initial Exposure Phase is determined by the virus's downward and inward movement from facial orifice, into the throat/trachea, and finally embedding into the lung tissue. The virus is very vulnerable during this phase because it is on the move. Most of the ingredients in the formulas in this category are classified pharmacologically as antiviral substances, but their effectiveness as virus killers is limited once the pathogen has progressed beyond the Initial Exposure Phase.

When learning Oriental Medicine, we are taught that medicinal substances have certain channels that they enter. It is easy to confuse the channels with the *zangfu* themselves. Sore throats, for example can be due stomach heat, without there being excess heat in the stomach *fu*. When the pathogen is in the channels or in the *fu* (bowels) it is in a structure designated specifically for movement. The *zang*, on the other hand, are the origin of movement, and though energy and substances pass in and out of them, their essential nature is more that of generation and storage rather than movement. When a flu pathogen is moving toward its target, it is passing through channels on its way to the lung; once in the lung, it becomes a *zang* issue.

From an OM perspective, antiviral substances tend to be in the "clear heat, eliminate toxin" category. Outside of the bloodstream, the actions of clearing, elimination, and movement in general are the collaborative work of *wei* qi and *jin* fluids. It is a function of *wei* qi to attack pathogenic factors, but *wei* qi collapses on contact with a pathogen that is embedded in a *zang*.

When the *wei qi* collapses in the lung *zang*, the result is inflammation. This collapse is partly due to the fact that the purity of the *zang* organ and the relative turbidity of the *wei qi* naturally repel each other, and partly because the *jin* fluids, upon which the *wei qi* depends for its own movement, are being consumed by the pathogen. The *wei qi* utilizes the cold nature of the “clear heat” herbs to cool and guide out the pathogen. So, while the pathogen is on the move, traveling within the system of channels, “clearing heat and eliminating toxin” is a legitimate and effective strategy. But once embedded, this strategy is of little use because the pathogen is no longer on the move and no longer where the *wei qi* can reach.

The incubation period of most influenza is from 1-4 days before symptoms begin and another 1-3 days before replication has reached its peak. The bottom line is that there are at least 2 days after initial exposure (and up to 3 days after symptoms have begun—as long as symptoms remain mild) to prevent the virus from growing to its full strength. Sometimes, if no symptoms have yet developed, mushroom strategies can still be used with good effect, because they can actively kill viruses while they boost the immune system. During the Initial Exposure Phase, you can also combine other Prevention Phase (immune booster) formulas with Initial Exposure Phase (antiviral) formulas. Initial Exposure Phase formulas can be used effectively if symptoms are limited to a tickle or glomus in the throat, mild lethargy, aversion to wind, slight loss of appetite, or body aches, and a resting pulse that is <18 BPM over the patient’s normal rate. Once the virus reaches the lung tissue, however, or if symptoms do not abate within the first 24 hours of use, it is recommended to switch to a Fully Engaged Phase formula or to combine Initial Exposure Phase formulas with Fully Engaged Phase formulas.

Many people overuse antiviral formulas, using them throughout flu season, like a Prevention Phase formula. This strategy depletes the body’s innate immune resources and engenders cold in the interior. It can make patients more vulnerable to future invasions and less able to fight off an acute infection.

#### Initial Exposure Phase Formulas

**Gan Mao Ling Formula** (*Gan Mao Ling Pian*) is a powerful antiviral formula. It is cold natured, and strongly clears heat. It contains a high percentage of isatis root (*ban lan gen*), which is supported with a variety of antiviral substances. Due to its broad-spectrum attack, **Gan Mao Ling** is an excellent choice if the individual is in the initial exposure phase, but the virus has not yet been identified. If it’s not H1N1, and is a warm-type viral infection, **Gan Mao Ling** can usually be used with good effect. **Gan Mao Ling** is often misused with viral infections. It is not effective for wind-cold patterns, since its cold nature can cause the virus to settle in. Before administering **Gan Mao Ling**, make sure the patient has either an elevated pulse rate or red throat to confirm heat.

**Andrographis Formula** (*Chuan Xin Lian Kang Yan Pian*) is a powerful antiviral and general antimicrobial formula with a high percentage of isatis root (*ban lan gen*). It is exceptionally effective against viruses that attack the throat, intestines, or urinary tract, making it an ideal choice for a viral strain that

affects both the upper respiratory and digestive systems or infections where sore throat is a chief complaint.

**Viola Clear Fire Formula** (*Di Ding Qing Huo Pian*) is highly effective against a wide variety of viruses, bacteria, and even fungi. Its mild, balanced quality makes it an excellent choice for children and for those who have a history of pneumonia or chronic respiratory infection.

**Zhong Gan Ling Formula** (*Zhong Gan Ling Pian*) is a powerful antiviral formula with a good percentage of isatis root (*ban lan gen*) for killing the H1N1 virus. It was developed to treat “severe flu or common cold” because it is highly effective at destroying a wide variety of viruses. Its nature is not quite as cold as the above three formulas, and it is therefore a little safer to use for patients who tend to a pattern of chills greater than fever, or frequent, severe infection.

**Ling Zhi Lung Formula** (*Ling Zhi Fei Pian*) contains a high percentage of sophora root (*ku shen*) and is the most appropriate formula when the patient presents with cough more prominent than fever or is prone to asthmatic breathing. Though *ku shen* is cooling, the formula overall is slightly warming, so if fever is above 101F/38.3C, it is recommended to combine with one of three heat-clearing formulas in this category.

**Siler and Platycodon Formula** (*Fang Feng Tong Sheng San*) is appropriate for either Initial Exposure Phase or Fully Engaged Phase since it treats heat in both the interior and the exterior. (For more details of its application, see below.)

**Five Mushroom Formula** (**Wu Gu Fang**) is the only one in this category that can be used by itself in either the Prevention Phase or the Initial Exposure Phase. (See above.)

#### FULLY ENGAGED PHASE PATHOPHYSIOLOGY

As stated above, what distinguishes the Fully Engaged Phase physiologically is the embedding of the virus in the lung tissue. *Wei qi* is what the body normally utilizes to expel pathogens; but *wei qi* is not associated with the *zang* organs themselves. An influenza viruses in the lung tissue will engage the *yuan qi*, which is deeper than *wei qi*, but not without its own defense mechanism. The two chief mechanisms of dealing with pathogens are expulsion and latency. Our constitutions are comprised of prenatal and postnatal *qi*. *Wei qi* is the postnatal aspect; *yuan qi* is the prenatal aspect. When the body is confronted by a pathogen, our first defense is usually to try and expel it. When *wei qi* cannot expel a pathogen, the *yuan qi* will attempt to force the pathogen into latency. Latency can be accomplished in a number of ways, but in the case of clumped heat in the lungs, the *yuan qi* will cause the *jing* to transform into phlegm in order to cool and isolate the pathogen. The encapsulation of the pathogenic factor will also protect the pathogen, just like a jail cell can protect a prisoner from an external attack. If the *yuan qi* is completely successful, the body will have a chance to adapt, the virus will die off after a week or two, and it will dislodge itself from the lung tissue where the *wei qi* can then guide it out of the system. If the *yuan qi* is only partly successful, it will succeed in creating latency, but fail in restoring the lung to full health; chronic issues or weakened immunity can develop shortly after the acute phase

has passed; or the latency can transform into something serious later in life when intrinsic supplies of *yuan qi* and *jing* are either depleted or overtaxed. (This latter phenomenon can be seen in the case of an Epstein-Barr Virus (EBV) later transforming into lymphoma, or in Herpes Zoster manifesting first as chicken pox and transforming later in life into shingles.)

When a pathogen is embedded, the heat is “clumped” and must be “dispersed”. Mere heat “clearing” or “draining” has little effect. Heat-clearing herbs, in this situation, are like spooning cold water onto a hot electric stove: it will have some temporary cooling effect, but as long as the source of the heat is present, as long as all the connections are in place, the heat will continue to generate. Something in the connection must be undone, dislodged, dispersed in order to eliminate the heat.

With H1N1, viral replication reaches peak production within 72 hours after the onset of symptoms; by this time the body’s immune response occupies and consumes most of the available qi. The most characteristic symptoms of the Fully Engaged Phase are racing pulse, high fever, pronounced fatigue/weakness, loss of appetite, and cough. Other, less frequent symptoms can include headache, chest oppression, myalgia, arthralgia, sore throat, or sinus symptoms. Still less frequent manifestations include diarrhea or vomiting. At the Fully engaged Phase, antiviral formulas (Initial Exposure Phase formulas) alone will have limited effect because their action is to “clear” heat, not to disperse heat or dislodge the attachment. Antiviral formulas have little effect on regulating the body’s immune response and so do very little to improve such symptoms as headache, body aches, lethargy, and thoracic symptoms. Once the virus has attached and is in full replication mode, an antiviral strategy cannot penetrate to the source. Fully Engaged Phase formulas are required in order to disperse heat, restore and regulate the body’s immune response, relieve symptoms, and force the pathogen out of the lung tissue where it becomes vulnerable once again.

#### Fully Engaged Phase Formulas

**Mulberry and Lycium Formula** (*Xie Bai San*) is an excellent formula to dislodge attachment between the lung tissue and the virus. It disperses constrained lung heat and rectifies lung qi. It is appropriate to treat influenza of any type as long as the pulse is fast. It is also safe for children. Since **Mulberry and Lycium Formula** treats asthmatic breathing too, there is no need to combine with anti-wheezing formulas. Once **Mulberry and Lycium Formula** has succeeded in improving the condition, it can be combined with one of the antiviral (Initial Exposure Phase) formulas to destroy the virus.

**Siler and Platycodon Formula** (*Fang Feng Tong Sheng San*) is a commonly used formula for treating hot-type influenza. Because it treats heat that is simultaneously attacking the interior and exterior, it is the formula of choice when the flu symptoms include chills with the fever or when the skin is breaking out from the heat pathogen. **Siler and Platycodon Formula** disinhibits urination and can help drain dampness. It will clear heat/reduce fever, calm cough that is due to heat, eliminate chills, and rectify the qi. Do not use **Siler and Platycodon Formula** if the patient has loose stools or diarrhea, since it contains Chinese rhubarb (*da huang*).

**Huo Xiang Zheng Qi San** (4200)\* is appropriate when the chief manifestations are vomiting and/or diarrhea. If the stomach is especially sensitive, it is often a challenge to keep formulas down. **Huo Xiang Zheng Qi San** can be administered a single tablet (or 1/8 teaspoon) with a little warm water every 30-60 minutes until the patient is able to take a larger dose. These symptoms are rare with common human seasonal influenza, but are statistically more frequent with the H1N1 flu variant.

**Ren Shen Xie Fei Tang** (0040)\* is the strongest in this category to rectify the lung qi. Use if bronchitis or pneumonia are developing or in the case of marked phlegm production.

#### CRITICAL PHASE

There is also a Critical Phase of the H1N1 flu that should not go unmentioned. If a patient becomes critical or if the formulas do not seem to be helping, he or she should be admitted to a hospital where they can be more closely monitored.

\* The number following the formula name indicates item number for the KPC granular formulas. If you prefer tablets and they are available, the number is preceded by the letter “S” for “Small” and “T” for “Tall”.

#### Endnotes

<sup>i</sup>The WHO and CDC no longer require countries to test and report all individual cases, so the numbers from all countries are assumed to be understated in approximate proportion with the strength of the WHO presence and state cooperation in each country. The reason for lifting this requirement is the enormous strain on resources compared to the apparently low fatality rate of the virus.

<sup>ii</sup>Leung PC, Lau TF, Cheng KF, Lam CWK. *Report A: A Herbal Formula for the Prevention of Transmission of SARS During the SARS Epidemic in Hong Kong Special Administrative Region—A Prospective Cohort Study.*

<sup>iii</sup><http://www.cdc.gov/flu/weekly/>

<sup>iv</sup>ibid.

<sup>v</sup>[www.cdc.gov/swineflu/guidelines\\_infection\\_control.htm](http://www.cdc.gov/swineflu/guidelines_infection_control.htm)

<sup>vi</sup><http://www.cdc.gov/h1n1flu/recommendations.htm>

<sup>vii</sup>Ryu YB, Curtis-Long MJ, Kim JH, Jeong SH, Yang MS, Lee KW, Lee WS, Park KH. Division of Applied Life Science (BK21 Program), EB-NCRC, Institute of Agriculture & Life Science, Graduate School of Gyeongsang National University, Jinju 660-701, Republic of Korea

<sup>viii</sup>Li HB, Yan D, Wang JB, Wang JY, Bei ZC, Wei L, Xiao XH, *Biological Evaluation of Radix Isatidis Based on Neuraminidase Activity Assay.*

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