

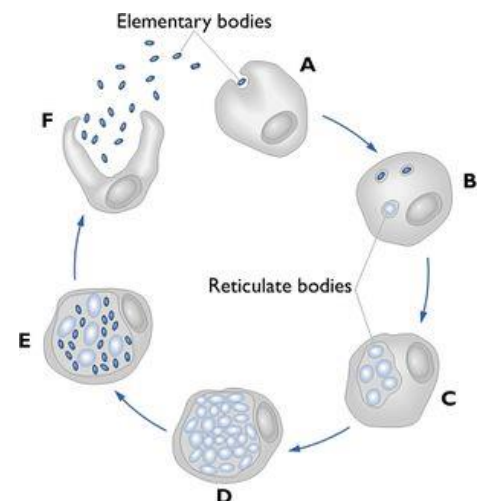
The heart and circulatory system is a vulnerable system to be infected by the atypical bacterium and mycobacterium because the bacteria that enter the lungs through breathing can easily get to the heart through pulmonary circulation. At any stage of our life when the heart immune system is weakened especially when we age, the heart can become infected and pass the infection to the blood vessels through blood circulation.

1) Atypical Bacterial Infections:

Chlamydia pneumoniae infection is the most common atypical bacterial infection of the cardiovascular system. *C. pneumoniae* is an obligate intracellular bacterium that causes most pneumonia as well as pharyngitis (sore throat), bronchitis and sinusitis. In addition to causing between 5% and 10% of ordinary winter illnesses, this bug is the atypical bacteria that frequently infect the cardiovascular system and might actually give rise to atherosclerosis. The association of *C. pneumoniae* with atherosclerosis is corroborated by the presence of bacteria in atherosclerotic lesions in major arteries, coronary and carotid, and the near absence of it in healthy arterial tissue.

C. pneumoniae infection is ubiquitous. Virtually everyone is infected at some point in life, and reinfection occurs commonly. The infection reaches 50% at the age of 20, and continues to increase slowly to 70% to 80% at ages 60 to 70. When the lungs are infected, *C. pneumoniae* can also infect the blood monocyte in the lungs and it is transported to the heart through pulmonary circulation and then to the circulatory system through blood circulation.

C. pneumoniae is an intracellular pathogen which only replicates inside the eukaryotic host cells because it depends on the host cell to supply it with the ATP. Therefore, it cannot be propagated in bacterial culture media in the clinical laboratory. It is a small gram negative bacterium which can exist as an elementary body (EB) and a reticulate body (RB). Elementary body (EB) is an inactive form which can infect the host and is taken into the cell through phagocytosis. It then transforms into a reticulate body (RB) and begins to replicate within the endosome. Often after causing the death of the host cell, the reticulate bodies then convert back to elementary bodies (EB) and are released back into the tissue.



a) Toxicity to Coronary Arteries:

Atherosclerosis and Coronary Artery Disease: *C. pneumoniae* infection has been found to be associated with increased serum C-reactive protein levels, indicating an increased inflammation since C-reactive protein is one of the most sensitive indicators of acute and chronic inflammation. High level of C-reactive protein predicts the risk of myocardial infarction, stroke, peripheral arterial disease and sudden cardiac death, even among apparently healthy individuals. *C. pneumoniae* infection is the major risk factor of developing atherosclerotic plaque and the rupturing of the plaque because the inflammation due to the infection can cause chronic and repetitive injury to the blood vessel endothelium leading to the development of atherosclerosis. Atherosclerosis is an intima-based lesion that accrues plaque slowly over decades. Normal blood vessel endothelium cells produce anti-coagulation factors such as heparin and nitric oxide to prevent blood clotting formation. When the vascular endothelium cells are inflamed due to *C.*

prevent blood clotting formation. When the vascular endothelium cells are inflamed due to *C. pneumoniae* infection, they will produce pro-coagulant protein and pro-inflammatory cytokine which can further destabilize the atherosclerotic plaque. When the atherosclerotic plaque ruptures, it can cause acute vessel thrombosis and blood flow can be totally blocked resulting in acute myocardial infarction, heart attack, cerebrovascular disease, stroke and peripheral vascular diseases depending on the location where the arteries are blocked.

Formation of the atherosclerotic plaques can cause thickening of the artery wall, loss of elasticity, and thus narrowing of blood vessels, which limits the flow of oxygen-rich blood to the body. It can happen anywhere in the body and affect any organ. When the coronary artery blood flow is obstructed, it causes coronary artery disease with cardiac ischemia. The most common condition due to cardiac ischemia is angina with symptoms of chest pain, shortness of breath, arrhythmias. The chest pain due to angina can be described as pressure, heaviness, numbness, or squeezing of the chest which could be mistaken for indigestion or heartburn. Although angina is usually felt in the chest, it can also cause pain in the shoulders, arms, neck, or back.

Acute heart attack occurs when the atherosclerotic plaques suddenly rupture and the coronary artery is completely blocked. Patients may experience tightness or pain in the chest, neck, back or arms, as well as fatigue, lightheadedness, abnormal heart beat, and anxiety initially. Then, shortness of breath, nausea, vomiting, and a feeling of breaking out in a cold sweat.

b) Toxicity to Cerebral Arteries:

Atherosclerosis, Transient Ischemic Attack (TIA) and Stroke: Atherosclerotic plaques in the cerebrovascular arteries can cause cerebrovascular artery diseases when the blood flow to some areas of the brain is partially, temporarily or completely blocked. TIA, or ministroke, occurs when part of the brain experiences a temporary lack of blood flow. Such stroke-like symptoms usually resolve within 24 hours and doesn't kill brain tissue or cause permanent disabilities. However, 1 in 3 people who experience a TIA later will experience a stroke. Symptom of TIA include vision changes, trouble speaking, confusion, balance issues, numbness, weakness, tingling, muscular weakness generally on one side of the body. More severe symptoms include an altered level of consciousness, dizziness, passing out, an abnormal sense of taste, an abnormal sense of smell, weakness or numbness on just one side of the body or face. The location of the blood clot in the brain will determine exactly where the weakness occurs. Patients can also experience dysphasia and may temporarily find themselves unable to speak or understanding words when the blockage or blood clot that caused the TIA occurred in the dominant brain hemisphere.

Ischemic strokes occur when there is a blockage in the blood flow to the brain. Interruption of the blood supply can cause brain damage and neuron death. The causes of the blockage are usually thrombi formed in one of the arteries that supply blood to the brain or embolus formed outside of the brain, commonly in the heart, and swept through the blood stream lodging in narrower brain arteries. Ischemia due to the blockage and following sudden hyperoxia upon removal of the blockage can result in high levels of free radicals causing brain inflammation and scarring which further damages the brain neuron. Patients usually have difficulty gaining full recovery even after a long period of time. Depending on the region of the brain that is damaged, patients may experience different symptoms including weakness, numbness, stiffness and difficulty of movement on one side of the body. Patients may also have problems with speech, memory, perception, vision, emotions, urination, and bowel movement.

Depression: When the blood vessel inflammation and atherosclerotic plaques caused the blood

flow to be partially blocked and therefore blood flow to the brain centers where the dopamine and other neurotransmitters were synthesized is reduced, it can cause depression. Because some of the atherosclerotic plaques formed in small arteries can be subclinical, patients may not get a clear diagnosis about their condition. However, patient may not respond to anti-depressants.

Dementia and Memory Loss: Vascular dementia can be caused by blockages and breaches in the brain's blood supply to the areas that control memories. The condition also is termed as "vascular cognitive impairment". Inadequate blood flow can result in damage and eventually kill the neurons. In vascular dementia, changes in thinking skills sometimes occur suddenly following strokes that block major brain blood vessels. Thinking problems also may begin as mild changes that worsen gradually as a result of chronic blood flow insufficiency caused by partial blood vessel blockage or multiple minor strokes in the smaller blood vessels, leading to cumulative damage.

Vascular dementia is widely considered the second most common cause of dementia after Alzheimer's disease. Many experts believe that vascular dementia remains underdiagnosed — like Alzheimer's disease — even though it's recognized as common. Symptoms can vary widely, depending on the severity of the blood vessel damage and the part of the brain affected. Memory loss may or may not be a significant symptom depending on the specific brain areas where blood flow is reduced. Vascular brain changes often coexist with changes linked to other types of dementia, including Alzheimer's disease and dementia with Lewy bodies.

c) Toxicity to Veins:

Spider Veins and Varicose Veins: Infection of the veins by *C. pneumoniae* can cause vein inflammation and patients can develop spider veins and varicose veins with symptoms of swelling, throbbing, and cramping of the legs and itching around the veins.

d) Toxicities to the Heart:

Atrial Fibrillation, Myocarditis, Pericarditis, Endocarditis, and Congestive Heart Failure: Atrial Fibrillation (AF) is the most common cardiac arrhythmia. Many recent studies point to an association between AF and inflammation caused by bacterial infections such as *C. pneumoniae*. C-reactive protein (CRP) has been reported to be significantly higher in patients with AF compared with a control group with no history of atrial dysrhythmias. Studies of 20 male patients with a diagnosis of myocarditis, perimyocarditis or pericarditis found that specific IgA antibodies to *C. pneumoniae* in patients' sera were found significantly more than sera from healthy blood donors. A striking variation over time in the prevalence of specific antibodies to *C. pneumoniae* was seen in consecutive male blood donors over a 5-year observation period. The research has led to the conclusion that *C. pneumoniae* may be associated with inflammatory heart diseases including myocarditis and pericarditis. *C. pneumoniae* infection can also cause endocarditis and mitral valve problem such as mitral valve prolapses.

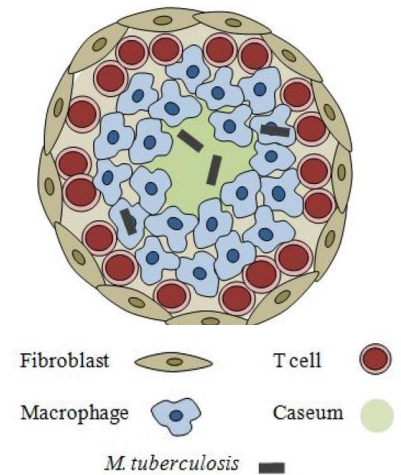
Inflammation of the cardiac muscle as well as its scarring due to inflammation interfere with the electric signal transduction of normal heart rhythm causing AF, eventually causing congestive heart failure (CHF). Infection of the cardiac muscle by *C. pneumoniae* can deplete the cell's ATP which can also cause CHF.

2) Mycobacterial Infections:

Mycobacteria tuberculosis is an airborne pathogen which mainly infect lungs and cause TB with lung structure damage. Tremendous amounts of evidence suggests that *M. tuberculosis* can also cause cardiovascular disease because the infected macrophage can carry the bacteria to the cardiovascular system and other organs through blood circulation. Over 2 billion persons are

with *M. tuberculosis* globally and about 2 million die from tuberculosis disease every year.

Mycobacteria avium complex (MAC) consists of two species: *M. avium* and *M. intracellulare*. **Mycobacteria Kansasii** and MAC are found in many places in the environment including tap water, fresh and ocean water, milk, bird droppings, soil, and house dust. The infection starts in the lungs through inhalation and the digestive tract by ingestion. The infections can cause chronic lung disease such as sarcoidosis, airway hypersensitivity conditions such as asthma and allergies, and digestive track problem such as stomach ulcers. The microbes multiply and colonize in the lungs, and then enter the bloodstream and spread throughout the body, affecting almost every organ including heart, blood vessels, lymph nodes, liver, spleen, bone marrow, intestines, skin and brain.



Mycobacterial Toxicities:

Mycobacterial infections from *M. tuberculosis* and other types such as MAC can cause granuloma formation as a result of an immune response. After antigen exposure and processing, T cells, macrophages, epithelioid cells, and giant cell are activated to form granulomas as a defense mechanism. Granulomas also include fibroblasts extra-cellular matrix and its formation helps surround and isolate the antigens. Formation of granulomas and tissue inflammation due to the infection can cause damage to the organs including the arteries and heart. Increased inflammation due to infection can cause coronary artery plaque formation and/or plaque rupture, and autoimmune disorder. The granulomas and resulting scar due to inflammation can interrupts the normal heart rhythm causing cardiac arrhythmia such as AF, as well as myocarditis leading to CHF.

3) Co-infection by Gram Negative Bacterium

Atypical bacterial and mycobacterial infections happen when patients' immunity is low. After they catch these infections, their immune system, especially the innate immunity and cell-mediate immunity, will be further suppressed. Such infections may also exhaust the B cell mediated humoral immunity. Therefore, a patients' heart may have other types of infections and the most common coinfections are gram negative bacterium and virus including *Pseudomonas aeruginosa* *Acinetobacter baumannii* as well as low-virulence pathogen such as *Pseudomonas putida*. These co-infected bacteria not only resist antibiotics that target bacterial cell wall synthesis but are also highly efficient at up-regulating or acquiring genes that code for mechanisms of resistance to other types of antibiotic drugs. These infections cause further inflammation and deterioration of the cardiac tissue. Patients may experience symptoms of cough, runny nose, shortness of breath, chest pain, and/or chills and fever.

4) Recommended Treatment

a) Atherosclerosis, Coronary Artery Disease and Angina

Atherosclerosis is viewed as a type of blood stasis in TCM. Wei Lab's CV Formula in combination with B-2 and Qi Booster are recommended to help remove blood stasis. CV helps improve blood circulation to the coronary artery, remove plaque from the artery, reduce blood vessel restriction and repair artery damage. B-2 and Qi Booster are also required to help clear the dissolved wastes. When the plaque is dissolved, the wastes will contaminate the blood and be disseminated to the rest of the body before reaching the liver and kidney where there are processed and secreted. Overload of the body tissue by these wastes can cause symptoms of

processed and secreted. Overload of the body tissue by these wastes can cause symptoms of fatigue, muscle weakness, body heaviness, headache, and insomnia. B-2 helps improve the collecting efficiency of the lymphatic system to help clean the wastes from body tissues. Qi Booster helps enhance blood circulation to assist quicker removal of the wastes.

Use of CV, B-2 and Qi Booster can help dissolve the atherosclerotic plaque and resolve coronary artery disease. Patients can experience less chest pain, shortness of breath and other angina symptom with 1-3 days of treatment. 4-6 weeks of treatment is required for significant improvement and sustained results.

b) Heart Attack or Myocardial Infarction

CV Formula can also be used for acute heart attack or myocardial infarction when the coronary artery is completely blocked. Symptoms of myocardial infarction are tightness or pain in the chest, neck, back or arms, as well as fatigue, lightheadedness, abnormal heart beat, and anxiety initially. Then, shortness of breath, nausea, vomiting, and a feeling of breaking out in a cold sweat. Use of CV Formula can help instantly open up the artery to provide the necessary oxygen to the heart and prevent severe heart damage when patients are having or on the verge of having a heart attack. Patients can notice instant improvement with better breathing, less chest pain and other symptoms. It is recommended to have 4-6 weeks of follow up treatment with CV, B-2 and Qi Booster. It is recommended to take the CV Formula periodically for preventative purposes after the treatment.

c) Atrial Fibrillation, Myocarditis, Pericarditis, Endocarditis, and Congestive Heart Failure

Myocarditis, pericarditis, endocarditis and the resulting atrial fibrillation (AF) and congestive heart failure are caused by a condition that is viewed as cold damp accumulation in the heart due to heart yang deficiency. Wei Lab's Myogen formula nurtures heart Yang and helps clear cold damp in the heart. Myogen also helps clear any infections of the heart by virus and gram positive bacteria. Myogen used in combination with CV, B-2 and Qi Booster helps clear inflammation of the cardiac muscle, pericardium and endocardium. The combined treatment helps enhance blood flow to the heart, remove the accumulated metabolic wastes in the cardiac muscle and pericardial cavity and restore the strength of the heart and heart rhythm. Patients can experience symptom improvement in 3-7 days. 4-6 weeks of treatment is required for significant improvement and sustained results.

d) Cardiac Infections by Atypical Bacterium, Mycobacterium and Gram Negative Bacterium

Infection of the heart by *C. pneumoniae* and mycobacteria is viewed as heart heat in TCM. Wei Lab's Kardinin helps clear heart heat and eradicate the infections. Kardinin is recommended in combination with Anginen, King Formula, Myogen, CV and Pacekeeping. Anginen helps break up and dissolve granulomas and scar tissue in the heart. King Formula enhances heart tissue regeneration and helps repair cardiac tissue damage caused by the infection and the granulomas. Myogen, CV and PaceKeeping help reduce heart inflammation, enhance blood flow to the heart, and stabilize heart rhythm. If patients also have cardiac gram negative bacterial co-infections which is viewed as damp heat, M-2 formula is also required to remove the damp heat and clear the infection. With the combined treatment, patients can experience symptom improvement in 3-7 days. 4-6 weeks of treatment is required for significant improvement and sustained results.

e) Transient Ischemic Attack, Depression and Memory Loss

Inflammation and blood clot formation on the cerebral artery limit the blood flow to the brain causing Transient Ischemic Attack (TIA), depression and memory loss depending on which area or areas of the brain being affected. Resurgen and Surgenin are recommended for treatment of these conditions. Resurgen helps remove cerebral blood vessel heat and reduce its inflammation.

Surgenin helps remove blood stasis in the cerebral blood vessel and dissolve the blood clots. The combined treatment helps open up the blocked cerebral blood vessel and resume normal blood circulation. Patients can experience symptom improvement in 3 days to 1 week. 4-6 weeks of treatment is required for significant improvement and sustained results.

f) Atypical Bacterial and Mycobacterial Infections of the Cerebral Blood Vessel

Brainin helps remove cerebral blood vessel damp and clear atypical bacterial and mycobacterial infections. Brainin is recommended to use in combination with Resurgen, Gold and Qi Booster. Resurgen helps reduce cerebral blood vessel inflammation. Gold with Qi Booster helps dissolve any granulomas or scarring. If there is gram negative bacterial co-infection, P-2 formula is also required to remove the damp heat and clear the infection. Patients can experience symptom improvement with the combined treatment in 3-7 days. 4-6 weeks of treatment is required for significant improvement and sustained results.

g) Post-Stroke Recovery

Treatment with Brown, LC Balancer, Xcel, Gold and Qi Booster is recommended. Brown and LC Balancer helps improve liver's lipid metabolism to provide sufficient phospholipids for enhanced brain recovery. Xcel improves the kidney's waste secretion. Gold with Qi Booster helps break up scar tissue in the brain. If there is still brain inflammation, Platinum is required to remove brain heat and reduce brain inflammation. Patients can experience symptom improvement in 2 weeks. 6 weeks to 3 months of treatment is required for significant improvement.

h) Peripheral Blood Vessel Inflammation, Phlebitis, Vasculitis, and Spider Veins

Phlebitis, vasculitis, and spider veins caused by inflammation and infection of the arteries and veins are viewed as blood vessel heat in TCM. Enlighten with Blood Tonic is recommended to help clear blood vessel heat. Enlighten helps reduce blood vessel inflammation caused by infections. Blood Tonic helps nurture the blood and improve blood circulation. The combined treatment helps reduce blood vessel inflammation, improve circulation and reduce the likelihood of blood clot formation. Patients can experience reduction of the throbbing pain, swelling, legs cramping and redness of the superficial veins in 1-2 weeks. 4-6 weeks of treatment is required for significant improvement. If there are blood clots formation or patients experience rib cage pain, a symptoms of blood flow obstruction, Nova is required to help dissolve the clots.

i) Carotid Arteries, Renal Arteries and Peripheral Artery Blockage

Arteries on other parts of the body can also be blocked by atherosclerotic plaques. Partially blocked carotid blood vessels in the neck that carry blood from the heart to the brain can cause symptom of headache, nausea, or vision problem. Stroke symptom will occur if the carotid artery is completely blocked. Reduced blood flow to the kidney due to narrowing of the renal artery can cause chronic kidney disease with symptoms of high blood pressure. Peripheral artery disease can cause sores that heal slowly. Poor circulation to the leg can cause numbness and pain in the calf muscle when walking or climbing stairs. Severe blood flow blockage can cause tissue death and lead to leg amputation. CV with Blood Tonic is recommended to help dissolve plaques or clots. Patients can experience symptom improvement almost right away. 4-6 weeks of treatment is required for significant improvement and sustained results.

g) Blood Vessel Atypical Bacterial and Mycobacterial Infections

Infection of the periphery blood vessel by the atypical bacterium or mycobacterium are viewed as blood vessel damp in TCM. Treatment includes Artinin, Enlighten and Gold. Artinin helps remove blood vessel damp and clear infections. Enlighten helps clear inflammation. Gold help dissolve granulomas or scarring caused by the infection. Patients can experience symptom improvement in 3-7 days. 4-6 weeks of treatment is required for significant improvement and sustained results.