

Hyperthermia - Therapeutic Fever

"I would cure all diseases if I only could produce fever." Parmenides, Greek physician and philosopher, 510 BC



Fever and heat therapy have been recognized for their beneficial effects on health since antiquity. Traditionally there have been two forms of hyperthermia—whole body and localized applications. We are now discussing the modern innovations to both approaches of hyperthermia, as applied in the treatment of cancer.

Fever turns out to be one of the missing links in understanding cancer. Most cancer patients have a lower core temperature and cannot mount a fever. Thus they are unable to activate their immune system

Hyperthermia in the Matryx Therapy Model – a Significant Part of the Cancer Treatment

We know scientifically that fever is a protective mechanism. When body temperature reaches 101.3° F (38.5° C) the immune system shifts into a state of alarm. At this temperature, the level of immune chemicals in the bloodstream doubles and immune defenses throughout the body increase. Within six hours, almost every major defense within the immune system doubles its efforts. This process appears to be dormant in many cancer patients, who typically report never having experienced a fever. To reactivate the immune system in these patients, the Matryx Therapy Model uses a process of controlled fever referred to in the scientific literature as “fever-range, total-body hyperthermia” - a form of treatment in which the entire body is heated to a moderate fever temperature of approximately 101.3 F (38.5 C). As a result, the immune system is activated in the same way as a natural fever would activate immune response, for example to an infection.

This approach is necessary to raise the body to a therapeutic fever range, unlike traditional methods such as sauna methods and hot tub, which do not affect core temperature or achieve temperatures that are as high as the temperature range that occurs during a fever. In the Matryx Therapy Model, total-body hyperthermia is provided to about 70% of all patients.

Local hyperthermia is another approach used in the Matryx Therapy Model. Localized heat is applied to the tumor tissue; a “region” or area of the body is selectively heated, again so that only the cancer cells increase in temperature. The local heating increases the temperature within the the malignant cells to 42 C (107.6 F) so that they die, due to the increased intra-cellular lactic acid production. Only the cancer cells are increased in temperature which leads directly to cell death (necrosis). The localized high temperature and the resulting cancer cell death also activates the immune system. The surrounding healthy cells are not affected. Local hyperthermia is used with approximately 99% of patients.

Fever: Friend or Foe?

In our culture, there is a pervasive fear of fever.

(NSAIDS - non-steroidal, anti-inflammatory drugs). The medicine represents hope and recovery. Giving medication implies a cure. (And so does the advertising.)

The message is: If you can just reduce the fever, the disease will go away. So the caretaker feels empowered by giving fever-suppressing medication. There is the belief that reducing the fever is a way of fighting the illness. **Ironically, the fear of fever is misplaced. Unless the fever is too high (104 °F (40.0 °C) or above over weeks at a time, no harm**

occurs. Fever signals the immune system to mount an increased defense and sets the process of healing in motion. In fact, fever is the natural response of all mammals to infection or illness. This is true for cats and dogs, elephants and tigers, horses and humans. Research has made it clear that fever is not the enemy; it is the friend of healing. This scientific rationale, supported by thousands of research studies, provides the basis for hyperthermia treatment at the **Matryx Center** and other medical centers in Europe, Japan, and world-wide.

The Role of Fever in Immunity

Fever is the necessary signal that ramps up the immune response.

Fever is a basic, protective response to infection, in almost all animals. The U.S. National Library of Medicine affirms this, defining as: “An abnormal elevation of body temperature, usually as a result of a pathologic process [ie infection]. However, lay people have assumed that fever was the cause of illness—not realizing that fever is the body’s primary response in fighting infection.”

A Century of Research on Fever

A number of researchers have tracked this issue in large clinical trials over the past 100 years, starting with published reports in 1854 that many cancer patients have a “**remarkable disease-free history.**” Several later studies confirmed this, reporting that people who developed cancer were rarely ill before their disease. If it seems surprising that this premise would have gone unrecognized for 150 years, consider the fact that scurvy among seaman caused by lack of vitamin C was not acknowledged for more than 100 after it was first confirmed by a ship’s physician. The doctor’s recommendations were adopted 105 years later when another naval physician reported a similar finding. In a similar pattern, studies on the importance of fever in a strong immune defense against cancer were published in the medical literature in 1854, 1910, 1934, and 1936, each study involved hundreds of patients. Researchers consistently found increased cancer risk for patients who had no history of infectious illness or fever. The majority of more recent studies have corroborated these findings:

- German research published in 1983 found that cancer risk more than doubled in patients who had not experienced major infectious diseases (2.6 times greater risk). Cancer risk was more than five times higher in patients who had never experience the common cold (5.7 odds ratio), and there was a 15-fold increase for those who had never experienced fever (15.1 odds ratio).
- A study of skin cancer patients, published in Melanoma Research in 1992 reviewed the medical histories of 500 comparable patients, with and without cancer. Researchers found that the patients who had experienced infections accompanied by fever had a much lower incidence of malignant melanoma.
- Research published in the journal Cancer in 1992 evaluated the medical histories of more than 200 patients with brain tumors, who were compared with over 400 similar but non-cancerous patients. Those who had experienced infections and colds had a 70% lower risk of cancer.

How Fever Activates Immune Function

As described in detail earlier in this chapter, fever is actually the signal that mounts immune activity in response to infection, illness, injury, or malignancy. At 101.3° F (38.5° C) the immune system doubles its functions, in response to impulses from deep within the brain stem. This increase in body temperature has been shown to call up various aspects of the immune function, including chemical messengers such as interleukin that call the immune system into action, **dendritic cells** that identify the infection or malignancy, heat shock proteins which activate white cells, , and T-cells to destroy viruses and cancer cells.[iii,iv]

The Role of Fever in Immune Development

In a newborn the immune system is immature and underdeveloped. For example, protective antibodies are not made by the infant's body, and the baby relies on those transmitted before birth by the mother to her infant through the placenta. These maternal antibodies become depleted by the time the baby is about 6 months old. At this point, the immune system of the child must learn how to respond to invasive infections such as bacteria, viruses, and parasites and to threats from within the body such as abnormal and cancerous cells. Like any other organ system, the immune system must develop and mature if the child is to remain healthy. On average, each newborn develops about seven viral infections in its first year of life. Researchers now view fever as a "necessary attempt by nature" to support immune system development and have confirmed that it is the process that activates the immune response.ii,iii,iv Cohort studies have also shown that a child needs at least 4 to 5 episodes of high fever before age 6 to develop an adept immune system. The development of immunity can be compared with the maturation of the muscles and skeleton, which only develop correctly if they are used all the time, and experience periodic exertion from activity and play. That is why we encourage children to participate in sports. A child who is bed-bound or wheel-chair bound does not have the opportunity to develop a proper skeleton and musculature as a result of disuse.

Effects of Fever Suppression

Absence of fever in cancer patients —In clinical cases evaluated at the Matryx Center, the vast majority of cancer patients report that they are never sick and they never missed a day at work. Typically, they may have had a few days when they experienced a sore throat, a cold, or a cough, but it was never accompanied by fever. When fever did develop, it was suppressed with aspirin, Tylenol, or antibiotics. Most cancer patients also have a reduced core body temperature and lack of circadian temperature rhythm.[xxi] These are indications of the inability to raise temperature to a level necessary to activate the immune system.[xxi] It is possible that we have unknowingly conditioned the immune system not to respond, through our use of fever suppressants with our children. **Interrupting the fever mechanism** —Surprisingly, the immune system can be trained to turn on or off in response to repeated cues, for example in response to certain medications. This trained or "conditioned" response was demonstrated in the work of Dr. Robert Ader and colleagues, published over a period of 25 years. Researchers found that the immune system could actually be deactivated through "classical conditioning." Applying this finding to the use of fever suppressing medications with children, the implication is that over time the fever response can be permanently inactivated by the frequent use of medication. Childhood fevers are also prevented when vaccines are used to avoid common childhood infections. From that point on, whenever the child develops a fever, the fever process is aborted. **Suppressing the immune response** - In time, the body becomes conditioned to suppress fever at the slightest hint of a fever. Since fever is the cue that activates many of

the key defenses of the immune system, this also means that immune response is cut short and never activated.

Patient's Experience with Hyperthermia at MCC

Nothing led me to suspect that I had breast cancer. I'm a strong woman. I've always been strong and active... I've always done my work with energy and commitment. (I've always been very health—one of those people who never misses a day of work.) I was initially diagnosed with breast cancer in the summer of 2005 and had breast surgery, 8 sessions of chemo, 25 sessions of radiation, and medication. Although I went into remission and felt better, in 2007 I learned that the cancer had metastasized to my bones and my oncologist told me that it was incurable. I see cancer as a disease I have to deal with. But I want to live. If other people can survive cancer, so can I. My attitude is that I will do whatever it takes. In August 2008 I began treatment at MCC, despite severe bone pain. At that point I had nothing to lose and everything to gain, so I decided to do the hyperthermia and dendritic cell treatments. The treatments at MCC had no significant side effects, although the two hours of hyperthermia were tough for me. The localized was no problem at all. I experienced the dendritic cell vaccinations as a severe flu with headaches and nausea that lasted for about 6 hours. It was unpleasant but I knew it will be over after just a few hours. After three treatments the pain went away. It was totally gone and I stopped taking pain killers. I have felt good ever since. Four months after my first treatment at MCC, I went for a checkup with my original oncologist and they did a PET scan. The bone cancer was gone. There was no trace of the cancer visible on the scans—they had disappeared and in September 2010 another PET-CT Scan still showed no recurrences and I am still in complete remission. Now I am hopeful about the future. God will decide when my time has come. But I know that I will live for many years to come.