

Immune Modulation

Maintain or Regain Good Health Through Our Own Immune Function

by Jesse A. Stoff, MD

*The marvels of technology teach us more and more everyday about how the human immune system works and how important the immune system is to the integrated systems of our bodies. This look at actual patient history, the history of immunology, how the immune system works, our growing recognition of the importance of NK cell function, and the newly emerging concepts of **Immune Modulation** demonstrates the power of our immune system in helping us maintain or regain good health.*

All About Results!

We are all very enamored with the hope offered by medical technology. As we look through our hope, we often overlook the patient experience and actual results, or "outcome," produced by the marvelous and exciting array of technological procedures now available.

I believe, and I think rational thinkers will agree, that patient outcome is the only significant marker for evaluating the efficacy of any type of treatment. Alternative practitioners have carried this banner for years.

Patient outcomes are the most important aspect of any health care application. The application of technology without improved outcome is meaningless. In fact, "what works" leads to the evolution of new and improved treatment that advances both science and patient outcome.

In my work I have used the most recent scientific developments in immunology, coupled with empirical methods to produce some very impressive patient outcomes. Here are some actual patient results from my clinical practice:

Patient Age: 65
 Condition: Prostate Cancer
 Outcome: PSA reduced to 3.0, bone scans and x-rays all negative for any sign of cancer or metastatic activity after 21 months.

Initial NK Cell Activity Level: .. 36
 Last NK Cell Activity Level: 76

Patient Age: 70
 Condition: Breast Cancer
 Outcome: Remission in 7 months.
 Initial NK Cell Activity Level: .. 4
 Last NK Cell Activity Level: 164

Patient Age: 71
 Condition: Metastatic Renal Cell Carcinoma
 Outcome: Achieved remission in 5 months.

Initial NK Cell Activity Level: .. 27
 Last NK Cell Activity Level: 120

Patient Age: 51
 Condition: B-cell Cerebellar Lymphoma and Arthritis
 Outcome: Remission in 10 months. Able to walk 5 miles per day and resume work.

Initial NK Cell Activity Level: .. 2
 Last NK Cell Activity Level: 55

These are just four patients from a patient population of thousands I have treated over the past twenty years. Each of them took time, and each of them took special care. However, many recovered from conditions that typically would be considered "incurable" or only treatable with procedures that have a low percentage recovery rate and often have very severe side effects.

The therapeutic process of immune reconstitution has accomplished these achievements. Reconstitution of the immune system long term is impossible without the integration of a process called "Immune Modulation." When successfully "modulated" the patient's immune system enables the recovery or remission utilizing the extraordinary function of the immune system. Though its application is still highly individualized and each patient will require a varying approach, standardization of treatment strategy is now within vision.

Immune reconstitution that includes Immune Modulation offers the opportunity for a better outcome with less invasive techniques and the elimination of the side effects so prevalent in most current treatment models.

Further, immune reconstitution is much less expensive than conventional therapy and is truly capable of improving the quality of the longer lives we are now living. The future impact of the proliferation of this technology is very compelling.

To explain Immune Modulation properly, some understanding of immunology is helpful. The following paragraphs serve as an introduction to immunology followed by a further discussion of Immune Modulation.



Immune Modulation



Origin of Modern Immunology

The science and practice of immunology can be traced back to 1721 and Lady Mary Wortley Montagu. She introduced England to a Turkish process of inoculation using unmodified Smallpox virus. The technique attempted to stem the ravages of the normal course of the disease through the activation of the immune system. The technique was crude and half of the patients died. However, those that survived gained immunity to Smallpox virus for the rest of their lives.

Information on the science of immunology doubles at the rate of approximately every 5 to 6 years. Over the nearly three centuries since Lady Mary's innovative contribution to immunology, scores of doctors and researchers have honed the science with more and more refinements. Much of the knowledge we have today about the immune system and the important blood tests we utilize did not exist a few years ago. All that we have learned about how we can protect ourselves and direct the activities of the immune system is a mere foreshadow of knowledge we can expect to have available in the very near future.

The Mission of the Immune System

The immune system operates according to three directives:

1. **Recognize** that which is foreign to the body and sound the alarm soon enough to thwart an invader.¹
2. **Respond** to the alarm with enough of a counter attack to quickly and effectively neutralize an unwanted invader.²
3. **Remember** what happened so that if the same situation were to arise again an effective response could be generated even faster.³

How the Immune System Works

Our immune system accounts for approximately 1% of our body's 100 trillion cells. The defending cells that comprise the immune system originally arise in our bone marrow and mature in the thymus, spleen and lymph glands. The different cell lineages that develop all share one common objective; to identify and destroy all substances, living or inert, that are recognized as not being part of what "should be in our body."

The marvelous array of deftly interacting cells that defend our body against microbial invaders arise from a few precursor cells that first appear about 9 weeks after conception. From that point on, the cells of the immune system go through a continuously repeated cycle of growth and development and become fully competent at around 6 months of age after our birth. The parent cells of our immune system are referred to as stem cells and these are the cells upon which the immune system depends to

both reproduce itself and give rise to the many specialized lineages that spring from it, the B cells, macrophages, killer T cells, helper T cells, etc.

Virtually all severe or chronic diseases have, to a greater or lesser degree, an element of immune dysfunction that is central to the disease process. The immune system is one of our primary and most critical systems and, among other things, helps to regulate our internal environment. It exerts its control by virtue of circulating components capable of acting at sites far removed from their points of origin. The complexity of this system rivals that of the nervous system, and in fact the similarities between the two are quite real.

The cells of the immune system are not isolated in a single body space or arranged in the form of a single organ. Instead, the majority of them exist as potentially mobile entities unattached to other cells. This characteristic is crucial to their function. Every minute of everyday, war is waged within our body. The combatants are too small to see. Some, like the infamous HIV virus, are so small that 230 million would fit on the period at the end of this sentence. Yet, they employ tactics that can vanquish the much larger cells upon which our immune system is based.

Usually, we never even notice the battles within us. We have evolved legions of defenders, specialized cells that silently route the unseen enemy. Sometimes these warriors mistake harmless invaders such as pollen for deadly foes and cause an allergic reaction. Occasionally, some of our own cells begin the mutinous uncontrolled proliferation characteristic of cancer and manage to evade the surveillance of our body's defensive forces.

For every successful penetration of our defenses, millions of attempts are repelled. We sleep securely at night trusting the invisible vigilantes of our immune system.

Factors that Affect Immune System Performance

There are five factors that will affect the functioning of our immune system. Unfortunately, in our modern society we are constantly exposed to most of them. They include **nutritional deficiencies**⁴ that can rob the immune system of the biochemical foundation that is relied upon for normal function, **infection**,⁵ **trauma**⁶ (exposure to radiation) and the exposure to **toxins**⁷ (i.e. heavy metals, petrochemicals, etc.).

Last, but certainly not least, **stress**⁸⁻¹⁴ is a major lifestyle issue relative to immune function. Stress is physiologically defined as any state wherein the body is expending energy faster than it can be regenerated.

When we experience chronic levels of stress, the body responds by producing excessive levels of cortisol. Cortisol has some important effects biochemically that are useful to us but with respect to immune function it can cause major suppression.

NK Cells – A Backup System

With depleted resources and skewed immune communication pathways our best shot for immune reconstitution and reactivation is through a back door to the immune system. The immune cells that we can best direct and reactivate in difficult situations are known as the Natural Killer cells. Natural Killer (NK) cells protect us from virally infected cells and cancer cells and are our last line of defense.¹⁵ They largely function independently and do not need significant direction from the T4 cells in order to do their job.

The name, Natural Killer cells, is based upon their innate ability to spontaneously and selectively (they do not hurt self) attack and destroy a wide range of abnormal cells. NK cells are a special subset of peripheral blood mononuclear large lymphocytes. They mainly circulate in the blood where they account for about 6 to 22% of the circulating lymphocytes. The NK cells can also be found in some tissues and organs, for example they may represent up to 45% of the tissue infiltrating lymphocytes in the liver. They participate either directly or indirectly in multiple networks relating to the development, regulation and communication within the immune system.

The NK cells are capable of rapid responses (an increase in NK cell function, as can be measured by lab testing), to exogenous or endogenous signals by producing a variety of cytokines, and other factors, that are involved in the interactions between immune and non-immune cells. Thus, they seem to be able to co-ordinate their own counter-attack even when the rest of the immune system is out to lunch.

In the face of most serious and chronic diseases, NK stimulation is the first step toward immune reconstitution. Fortunately, there is well-documented evidence of the inverse relationship between NK cell function and serious disease, including cancer occurrence and its recurrences.

A number of natural substances can elevate NK cell activity. However, because the elevation is accomplished by "stimulation" rather than "modulation" the effects are limited. As discussed earlier, stimulation typically causes a spike in NK cell activity that is of short duration followed by a decrease in activity to a level below the original baseline.¹⁶⁻³⁰

There are few substances that increase NK cell activity through a modulation effect rather than a stimulatory reaction. In my experience with thousands of patients who were severely immune challenged, the most powerful natural substance to increase NK cell activity through immune modulation is Antigen Infused Dialyzable Bovine Colostrum/Whey Extract. Not only is it highly effective for patients suffering from serious, chronic and degenerative disease, the substance also modulates immune function to a more effective level in healthy individuals.

Immune Modulation

Immune Modulation – Putting It All Together

Our immune system functions as an information network and is comprised of a variety of biochemical substances. Such substances as cytokines, transfer factors, neuropeptide hormones and other infotides must be a state of *dynamic equilibrium* to communicate and function optimally. Maintaining this state of dynamic equilibrium requires the immune system to adjust constantly to changing circumstances. It can only adjust and respond to a changing environment if its cytokine communication pathways are intact and functional. Maintaining these pathways in the face of an ever changing environment is a process called "Immune Modulation." Immunologists are only now recognizing that maintaining active immune modulation capability is the critical pathway to maintaining or regaining good health.³¹⁻³⁴

Modulation, or regulation, of a single system has been shown consistently to be critical to the operation of all systems. "Systems integration" awareness in multi-system operations continues to expand. Comprised of many complex "integrated" systems, the human body must have intact accurate information and the ability to effectively communicate that information to all other systems. This continual exchange and dependence produces appropriate and adequate responses to the internal and external environment. ➤



Immune Modulation

► Stimulation is often confused with modulation (restoring communication pathways) or regulation (restoring balance). These are actually very different effects. Stimulation is a suggestion of motion in only one direction for any or all systems. Modulation or regulation suggests motion in multiple directions for multiple systems. In fact, modulation suggests the potential for the absence of motion when appropriate.

The problem with stimulation is always the question of "how much and when?" In the information provided by a stimulant remains the danger of "stimulating everything." Though stimulation will generally boost the output of a system for a short time, when the stimulatory effect wears off the system usually declines in function and then falls below the original baseline operating level.

Modulation, on the other hand, is the regulation of a system for the purpose of providing optimum function. Modulation moves the multiple systems towards a state of harmony and balance. The value of immune "system" modulation for the recovery and maintenance of health cannot be overstated.

Immune modulation is a dynamic process that requires constant support. Evolutionary biochemistry has imbued our immune system with several overlapping protective tactics that can at least partially replace one another. Therefore, to give our immune system a maximum level of support so that it can seek its appropriate balance to protect us I have found in my practice that we must support the re-establishment of information pathways in the immune system to allow the process of Immune Modulation to proceed effectively. This can be accomplished biochemically through a combination of detoxification procedures, appropriate supplementation, and sometimes immunochemical intervention.

Immortality is not a realistic goal, but having a maximum quantity and quality of life is. We need an intact and vigilant immune system. The use of effective support for the process of Immune Modulation is highly indicated for everyone at this juncture in the continuing evolution of our bodies and our knowledge.

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