Prologue

November 2012

I was sitting in my car in an emptying parking lot outside my radiologist's office as the business day wound to an end in the unadorned northern New Jersey city of Hackensack, a place most people drive past on the way to somewhere else without taking notice. The town is primarily known for the excellent hospital, Hackensack University Medical Center, and the county courthouse. Neither place is somewhere you want to find yourself.

The contrasts were stark. Perhaps they would have even been comical if they had not come after the clear verdict I had just received from my latest bone scan. My ten-year battle with cancer was not yet over, as I had thought and hoped it would be.

The war would continue, it seemed. The remission I had hoped was a permanent victory had merely been a temporary truce. My mortal enemy was back and with a vengeance!

For a moment, I allowed myself to wander aimlessly, taking in the gravity of this news and allowing myself this brief moment to come to terms with what I had just learned, to have this time alone to process it and be calm.

Hackensack, a gritty and energetic community, has its attractions, I suppose. But it has never been called a place of pastoral beauty and serenity. Yet as I sat in my car, I was strangely at peace and in awe of the beauty around me.

I got into my car, took a deep breath, and looked around. Nearby buildings were backlit by a calming orange glow as the sun set that November evening in 2012. The air was crisp, clean, and refreshing. The chatter from the McDonald's next door was actually amusing, and the cacophony of the traffic on Essex Street a block away was wonderful. I could hear birds chirping in trees that were shedding leaves in the fading light.

It was all nothing short of beautiful. As I sat there, I was overcome with a sense of tranquility. Hackensack, the traffic, the noise, the birds, the trees, and the setting sun—God's earth was beautiful. Hackensack was beautiful. I chuckled. Of all places to find beauty!

I would miss this, I thought. My life was coming to an end. I will not see all this beauty any more. I will not enjoy the company of my loved ones much longer, my loving wife, my children, my grandchildren, my friends. The thought was heart breaking.

For a moment, my heart sank a bit—but only briefly. I pulled myself up from the depths of despair and quickly regained my calm.

As the newly recognized beauty of Hackensack washed over me, I was surprised that even though I knew the cancer was back and the prognosis was grim, the only thing I felt was a rather peculiar sadness. I realized I might be coming to the end of my life, but I was also aware that I felt no panic, no anxiety, and no grief. It was a calm kind of sadness. I wasn't quite ready to surrender. "I shall fight," I thought, but I was also completely at peace with whatever might happen in the future. I felt two wildly contrasting emotions, a strong will to fight for my life yet a willingness to surrender to my fate.

Then came what you would expect. "Now what am I going to do?"

As a physician, I knew what it all meant. After all, I had been fighting cancer at this point for years. I had reached a point only five months before where I had been declared cancer-free after a long fight.

That July, I had a CT scan that showed no signs of cancer in my chest, abdomen, pelvis, or the surrounding bones. I was cancer-free.

I had a surgery on my vocal cords at New York University Medical Center on October 19 and was home by October 23. The pain started almost immediately, and I had wishfully attributed it to the uncomfortable hospital bed. But it continued, and as a physician, I knew that if it continued, there might be something more seriously wrong.

So when the back pain persisted for over 2 weeks, I knew it was time to call my oncologist, Dr. Sharma and go for a bone scan, which is what led me to the parking lot in Hackensack.

After the scan, I had walked over to the radiologist and we looked together as he put it up on the screen. I could see what he was seeing: several areas of cancer nodules in my

spine, ribs, and pelvic bones, five of them. He pointed them out. “Here and here and here and here.”

I nodded my head.

He put his arm around my shoulders as we sat in front of the screen.

“I am so sorry, Dr. Iqbal. I wish I could tell you something better.”

“Thank you,” I said. “I am ok, not even terribly upset. I expected this. It’s just another battle in this ongoing war. I just have to fight again.”

After I went to my car in the parking lot, startled at the newfound beauty of a fall evening in Hackensack, and immediately began planning my next move. Everyone in my family would be waiting for the news.

I first called my son Sheeraz, a pediatrician. I knew he’d be wrapping up his office hours by then.

He picked up the phone, and his first words were, “What does it show?”

I will never forget the first penetrating silence after I told him, followed by his anguished voice. I could actually hear him slump down hard in a chair.

“Oh no. Oh God, no.”

“Sheeraz,” I said, “don’t be too upset. This is nothing new. We have fought this before, and this is just another battle in the ongoing war; we’ll figure something out. I will be home soon.”

Next, I called my oncologist, Dr. Indu Sharma, who was just about to leave her office. I gave her the report.

“This is bad news,” she said. “There is no standard treatment, as you already know, but we’ll try to figure something out. I’ll do a literature search over the weekend and get back to you.”

So I drove home, feeling numb.

When I got home, there was a pall over everything. Fauzia wanted to know, and I sat her down and told her. The news met with predicable results.

“Don’t worry; we’ll figure a way,” I said.

When I called my daughter Noreen, she immediately started crying.

“There is nothing to cry about, my love,” I told her.

“But, Dad, we don’t want to lose you,” she said through sobs.

“Don’t worry sweetheart, I don’t want to die either. I will fight it and conquer it again.”

But no matter what I said, there was a deep, deep gloom over the household.

That night, no one slept in the Iqbal household.

No one, Except me. I slept like a baby.

Epilogue: Bright Hope on the Horizon

November 2016

Let’s be realistic. There is never a good time to have cancer

But today, we are tantalizingly close to being able to say we have cured a particular cancer.

The doctors have begun to expand their knowledge about how to marshal the body’s own defenses, its own immune system, to attack cancer.

We all are familiar with the miracle of modern antibiotics. Most infections, even the serious and life-threatening kind, can usually be cured by the proper use of antibiotics. But antibiotics cannot work without help from the patient’s immune system.

Every day, literally hundreds of times a day, various bacteria and viruses invade our bodies. Yet, we are not constantly sick. Why? Because our immune system is always on guard, ready to fight and destroy every potential enemy. The invaders are promptly killed and the threat is eliminated without us ever becoming aware of it.

It is only when the bacteria manage to establish a beachhead that we show signs of illness. Even then, the immune system plays a critical role in helping the antibiotics conquer the infection. Antibiotics simply cannot work if the immune system is diseased and unable to help, as in HIV. That is precisely why in HIV even a minor infection can threaten the patient's life despite the use of antibiotics. Our immune system is the most powerful, sophisticated, efficient, and elite fighting army one can imagine.

So, why does it not fight the cancer and kill it off? For decades, medical scientists have struggled with precisely this question. Why was the immune system actually ignoring the horrid invasion by cancer?

It has been only in the last few years that we have realized what was happening.

Our immune response is a pattern of repeated starts and stops regulated by a series of checkpoints.

Scientists have learned that cancer has the ability to manipulate the checkpoint signals. As soon as the immune forces attack the cancer, it initiates a checkpoint signal to terminate that immune response. Cancer has a way of making the checkpoint say—"No problems here. The threat is gone. All clear now."

Once scientists understood that mechanism, they began to develop medicines that neutralized the false checkpoint signals created by the cancer, thus allowing the immune system to continue to attack and kill the cancer cells. These drugs are called checkpoint blockade therapies.

In clinical trials, these medicines have produced a 66 percent success rate against an extremely deadly cancer, malignant melanoma. This is an astonishing success, and we may even improve upon that success as we learn to use different drug combinations and newer and better drugs are developed. Each day brings the dawn of a new hope.

Another prong in the battle that has brought jaw-dropping positive results is something called adoptive T-cell transfer.

Adoptive T-cell transfer therapy is the most promising technique we have to finally attain the Holy Grail of cancer medicine—to be able to utter those three magical words to the patient: "You are cured!"

T-cells are our immune system's killer cells. Think of them as an elite commando force that can seek out and destroy the enemy. The challenge is this: because of mechanisms we are still trying to fully understand, cancer cells camouflage themselves from T-cells. So, how do you make the T-cells "see" this enemy called cancer? If they can see it, they will attack it and destroy it.

In February 2014, two groups of scientists in New York City presented the early data of what can only be described as a phenomenal study with phenomenal results.

In a study using sixteen adult leukemia patients, scientists took samples of each patient's T-cells and samples of his or her cancer cells. Under laboratory conditions, they trained those T-cells to recognize certain specific traits of that patient's leukemia cell and then attack to kill it—it was like teaching a drug-sniffing dog to find the cache of heroin. These were called "smart T-cells."

The researchers cloned millions of these specially trained "smart" T-cells and infused them back into the patient's blood stream replacing the original "dumb" T-cells.

Once infused, the trained T-cells set out like an elite commando force equipped with exact GPS coordinates and hunted down and killed the cancer cells. The success rate of achieving a complete response was an astounding 88 percent!

The incredible success of that small study, and a few others since, has sparked an explosion of interest and further studies by various medical centers and pharmaceutical companies worldwide. This concept & technique is rapidly advancing with astonishing success rate and may well become the standard treatment for most cancers.

It is nothing short of amazing. Today we are on the cusp of advances that were not even imagined just a few years ago. Today, we are tantalizingly close to a cure for cancer.

I believe this with all my heart.