IN THE SPOTLIGHT: JFK

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From a wealthy, powerful and politically prominent Irish Catholic Family, John Fitzgerald Kennedy, nicknamed Jack, was born in Brookline, Massachusetts on May 29, 1917. As with all other presidents, his family shaped his life and career. While his father Joseph Kennedy instilled his drive, competitive spirit and a sense of obligation to national service, his mother, Rose Fitzgerald Kennedy, made sure he received the best education, proper discipline, morality and most importantly, security. Not unlike Polk, Teddy Roosevelt and Truman, Kennedy faced physical challenges in childhood but managed to remain physically active. Also, like Lincoln, Roosevelt and Truman he became an avid reader. Yet unlike the always embattled Truman, this sense of security and confidence from his upbringing provided Kennedy a cool and detached persona necessary to deal with the many crises later in his life. He developed a “Lincoln-sense” about the fragility of life and fragility of success. Further, along with his wealth and intelligence, he was strikingly handsome and charming giving him every advantage through the new medium of television which he took the time to master.

Jack graduated from Harvard in 1940 and joined the US Navy just before the United States was drawn into WWII in 1941. Assigned to the South Pacific, he sustained a severe back injury when his PT-109 torpedo boat was destroyed on August 2, 1943 by a Japanese destroyer. Despite his suffering, he fearlessly swam and towed his surviving crew to safety. This example of extraordinary courage and determination became a hallmark of Kennedy’s rapid rise to political leadership. Jack became a war hero and was awarded the Navy Marine Corps Medal his bravery and leadership and the Purple Heart for injury from enemy action in the South Pacific. Of course his father, Joe Kennedy ensured that his son received solid press coverage for these honors.

In 1946, he was elected to the first of three terms in the US House of Representatives. In 1952, he was prompted by his father to challenge the powerful Republican senator of Massachusetts, Henry Cabot Lodge. With his money, power, political team and his keen persuasive skills, Jack defeated Lodge. This victory and his subsequent marriage in 1953 to the glamorous socialite Jacqueline Bouvier propelled him into the national spotlight. Nonetheless, Kennedy’s marriage was a troubled one. Jackie was an extravagant spender and Jack, a philanderer, whose affairs persisted into his presidency yet remained out of public scrutiny because of the complicity of a cooperative press.

Because of continued back pain, Kennedy underwent back surgery (simultaneous posterior fusion of L5-S1 and the left sacroiliac joint) with a life-threatening postoperative course. During his recovery in 1955, he wrote Profiles in Courage, a collection of essays about politicians who took politically unpopular stands. Despite controversies about its authorship with influences from his father, the book won the 1957 Pulitzer Prize for biography. This helped Jack’s meteoric rise which culminated in a victory over more experienced rivals for the Democratic Party’s nomination for President on July 13, 1960 to face Republican Vice President Richard Nixon. Kennedy was positioned as a leader of the
new generation and poised to embark on a “New Frontier.” His campaign for president set a precedent for future campaigns that exist today. Among his strategies were the innovative use of polling, personal organization separate from the party and image making. But the key event contributing to his narrow victory in the Presidential election campaign was a series of four televised debates between Kennedy and Nixon, the first of such in history. It was estimated that more than 100 million viewers watched at least one of the debates. It was argued that Nixon won the debates by radio while Kennedy prevailed by television. It was Kennedy’s good looks, eloquence and poise that played well to the cameras. Nixon’s face without make-up and his “5 o’clock shadow” made him appear haggard, pale and menacing. Also, Kennedy’s choice of Lyndon Johnson as his running mate didn’t hurt him to defeat Nixon “by an eyelash” on the November 8 election, one of the closest in American history. **JFK became the 35th President of the United States**, the nation’s first Catholic and youngest ever elected. He was the first great president since Lincoln with no administrative experience, nevertheless Kennedy organized one of the most systematic and highly publicized transition in history.

In his inaugural address on January 20, 1961, Jack asked Americans to make sacrifices for the greater good in an effort to pursue freedom abroad and prosperity and justice at home by urging Americans to *“Ask not what your country can do for you, ask what you can do for your country.”* Many were hopeful that this good looking young President with an appealing smile, a quick wit, an aura of confidence and with impressive oratorical abilities would lead America into a brighter future. Tragically, he was President for just over 1000 days. He did lead the nation through three turbulent years.

With his elegant wife Jacqueline and their two small children, Kennedy brought glamor and excitement to the White House. His good humor and high energy hid the fact that he suffered with excruciating pain from his back injury in the war. In the first year of his presidency, he supported a failed mission by anti-Castro Cuban exiles at the Bay of Pigs. The next year, the Soviets put nuclear missiles in Cuba, but withdrew them after Kennedy imposed a naval blockade at time when the world was on the brink of a nuclear war. He was entangled with the Cold War with the Soviets and increased United States involvement in Vietnam. Tensions eased with the 1963 nuclear test ban treaty though the “space race” continued. One of his crowning achievements was to encourage America’s manned space program with a pledge to land a man on the moon. JFK was an ardent supporter of the Arts and mindful of the disadvantaged. He established the Peace Corps and proposed wide-ranging civil rights legislation but never saw its enactment. On November 22, 1963, he was shot to death in a Dallas, Texas. The nation watched and mourned as he was buried in Arlington National Cemetery. His grave is marked by an eternal flame derived from a quote from his inaugural address, *“...and the glow from that fire can truly light the world.”* He also left us with these words, **“Mankind must put an end to war or war will put an end to mankind.”**

Jack made a lasting impression on American history. His tragic death brought premature closure to his energetic and revolutionary “Camelot” administration. His mystique continues to captivate us; like Abraham Lincoln he was shot down from the height of his powers leaving America to speculate about how the events of the late 20th Century would have unfolded if was not assassinated.
Jacqueline Kennedy Onassis

She was among the most glamorous First Ladies in American History. Young ladies and women copied her clothes, her hairstyle, and her elegance and grace. Her devotion to her young children was admired. But she is remembered most of all by her courage and grace at a time of personal and national tragedy. “Jackie,” as she was called, was born into the wealthy Bouvier family on July 28, 1929 in Southampton, New York. While working for a Washington DC, newspaper, she met the handsome congressman, JFK. They married in 1953. After Kennedy became President in 1961, the First Lady made the White House a center of American culture. She supervised its redecoration with period furnishings and invited famous artists to perform there. Jack and Jackie brought to the White House an enchanting elegance and a conviction that all things were possible if dealt with intelligently and hard work. Then, in November 1963, that world ended. She was at the President’s side in a limousine in Dallas when he was assassinated. The image of the stunned First Lady in her blood-splattered suit will never be forgotten by those who saw it. Her dignity and strength in the days that followed eased the nation’s grief. When interviewed all that stuck in her head was a line from her husband’s favorite song “...Don’t let it be forgot, that once there was a spot, for brief shining moment that was known as Camelot.” A second marriage to Aristotle Onassis, a wealthy Greek ship owner, was unsuccessful. She moved to New York, where she worked as a book editor. She died in 1994, mourned by the nation she had represented with dignity.

When the Kennedys visited France in 1962, the President joked, “I am known as the man who accompanied Jacqueline Kennedy to Paris.” For more on Jackie please refer to her biography.

Disclosure statement: The author has no conflicts of interest to disclose.

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IN THE SPOTLIGHT: LBJ

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Lyndon Baines Johnson was born on August 27, 1908 in Stonewall, Texas. After attending high school in nearby Johnson City and graduating from Texas State University in 1930, Johnson attended law school at Georgetown University in 1934. Always mindful of his own impoverished childhood, he devoted himself in bringing dignity and justice to the poor. Johnson married Claudia Taylor “Lady Bird” who became his closest adviser, loving companion and source of stability, however he would not prove to be a faithful husband. He was elected to a seat in the US House of Representatives in 1937 and was re-elected five times. It was here where he seized every opportunity to advance his programs and political future. He became the first member of Congress to obtain a leave of absence to serve in WW II as a Navy officer. Johnson won election to the US Senate in 1948 and quickly moved up the Democratic hierarchy in the Senate and became the majority leader after the 1954 elections. Smoking up to three packs of cigarettes a day, he suffered a heart attack in 1955. For his recovery, he quit smoking, controlled his weight and resumed his 12-hour a day work schedule. Johnson, known by his “LBJ” initials became the most effective Senate leader in U.S. history. As majority leader, he perfected his famous up-close “treatment” as a means of steering senators in his direction.

“The Treatment could last ten minutes or four hours. It came...at the Johnson Ranch swimming pool, in one of Johnson's offices, in the Senate cloakroom, on the floor of the Senate itself...It ran the gamut of human emotions....in one direction. Interjections from the target were rare. Johnson anticipated them before they could be spoken. He moved in close, his face a scant millimeter from his target, his eyes widening and narrowing, his eyebrows rising and falling. From his pockets poured clippings, memos, statistics. Mimicry, humor, and the genius of analogy made The Treatment an almost hypnotic experience and rendered the target stunned and helpless.”

This master legislator armed with the Johnson Treatment and nearly a quarter century experience in politics became Vice-President in 1961 under President Kennedy whom he regarded as a much inferior leader to himself. He assumed the Presidency on November 22, 1963 as a result of the Kennedy’s assassination. LBJ took the oath of office aboard Air Force One to become the 36th President of the United States at the Dallas, Texas airport aboard the plane carrying Kennedy’s body back to Washington.

He became president in his own right in 1964 by defeating Republican Senator Barry Goldwater of Arizona in one of the greatest landslide victories in American history. As the masterful politician, he pushed through Congress some of the most significant social reforms in the nation’s history. He continued many of Kennedy’s initiatives, the triumphant legislative landmark Civil Rights Act of 1964 marked the end of the dual society that had persisted for a century. This Act included a provision of
Fair Employment Practices with Title Seven prohibiting discrimination on the basis of race, religion, gender or national origin. This Act also barred discrimination in public, hastened desegregation in schools and promoted fair voting practices. By executive order, affirmative action for women and minorities began. Johnson was determined to build a “Great Society” to improve the lives of ordinary Americans. His grand vision included a declaration of “War on Poverty;” creation of Medicare, funded through Social Security, and Medicaid, to provide hospital and medical benefits for the poor, regardless of age; engineering of the Food Stamp Program to feed millions of poor Americans; and passage of a model cities program to fund projects for inner-city residents. Among his other accomplishments was the nomination of the first black Supreme Court Justice, Thurgood Marshall, and the Civil Rights Act of 1968 which imposed penalties for civil rights violations and discrimination in housing. However, these movements contributed to the defection of white southerners from the Democratic Party. LBJ also tended to the environment by combating water and air pollution with the Water Quality Act, the Clear Water Restoration Act, the Clean Air Act and the Air Quality Act. He helped consumers by pushing through the Wholesome Meat Act and Fair Packaging and Labeling Act as well as the national Traffic Safety and Highway Safety Act. He completed Kennedy’s focus on the arts and humanities with the creation of the National Foundation for the Arts and Humanities. Johnson, originally believed to be a conservative by his opponents, actually completed the development of twentieth-century American liberalism started by Teddy Roosevelt and perpetuated by FDR’s New Deal. Johnson believed that all interests in American society would benefit: whites and minorities, northerners and southerners, and laborers and capitalists.

However, his vision was blinded and shattered by the bloody Vietnam War and gaps between expectations and reality among African Americans. Racial riots and the escalation of troops in Vietnam contributed to civil unrest and protests. In his final three years as President, his quest to be remembered as the President who educated young children, fed the hungry, helped the poor, protected the right to vote, ended hatred among his fellow men and ended war among brothers of this earth - foundered. It may have been his own undoing. He was determined to not let South Vietnam fall to the communists. Despite his bold focus on domestic programs he chose to continue the containment policies of the Eisenhower and Kennedy administrations and not take political and national security risks with Vietnam. There were grave doubts about success in Vietnam, nevertheless Johnson’s major blunder began right from the start of his time in office with a pattern of deception by concealing the 1963 reports that the combined American-South Vietnamese efforts were failing. During his second term, Johnson and his advisers hoped to achieve NOT an outright victory. However, their doubts about this goal were not disclosed and the U.S troop strength escalated from 70,000 to over 550,000 during his last year in office. His presidency was now overwhelmed and shaped by the increasingly unpopular Vietnam War that divided the nation. Antiwar protests intensified, racial unrest intensified, “counterculture” revolts intensified and other marginalized groups including gays and lesbians, Native Americans, Latinos and feminists joined the fight against discrimination and inequality. History added more salt into LBJ’s wounds with the assassinations of Martin Luther King Jr and Robert F Kennedy only a couple months apart in his final year in office. He chose not to seek re-election, left office embittered and discouraged, retired to his ranch in Texas, agonized over his legacy and died of a heart attack on January 22, 1973 on his Texas ranch the day after he had learned that peace was at hand in Vietnam. He had the most mixed legacy of all Presidents. Despite his tragic decisions with Vietnam, his domestic accomplishments may be
second only to FDR. Take note of the Landmark Laws of his Administration. Finally, among the highlights of his time in office was the growth of the manned space program, principally the development of the Apollo program designed to land men on the moon thus setting the stage for Kennedy’s “Final Frontier.”

LBJ left us with these inspirational words, “We have the opportunity to move not only toward the rich society and the powerful society, but upward to the Great Society.”

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STRATEGIC PLANNING UPDATE

ISHLT has been engaged in an iterative strategic planning process since April 2015 with the goal to develop a 5-year Strategic Framework. This process has involved collecting input from ISHLT members including current and past leaders, via surveys, conferences calls, and online community discussions. The Board of Directors and the Strategic planning Task Force met for a day in October to begin evaluating the information collected. A diverse group of 21 Society leaders and staff met in Coral Gables, FL in January 2016 to consider all of the data collection findings and discussions to date, and to draft a Strategic Framework for the Society. The meeting was facilitated by Susan Meier, Principal of Meier and Associates.

The objectives of the retreat were to:

- Advance the strategic planning work conducted to date,
- Build consensus on the core elements of the ISHLT 5-year Strategic Framework, including 3-5 strategic imperatives and key goals, and
- Create work groups to develop the key objectives/tasks for each strategic imperative’s goal(s).

After two days of engaging discussions, consensus was reached on an initial draft of the Strategic Framework that includes four guiding principles, four strategic imperatives, and goals for each imperative. The Strategic Planning Task Force created four Work Groups that will meet between February and April to develop objectives for each of the stated goals. The work groups will meet up to two times per month and their progress will be discussed at the periodic Strategic Planning Task Force meetings. Work group recommendations will be presented to and discussed by the large Strategy Work Group on April 25th in Washington, D.C. The consensus of that group will be presented as the final draft of the Strategic Framework to the ISHLT Board of Directors for adoption that week. Once the Strategic Framework is adopted by the Board, it will be shared with the members of the Society and work will commence to implement the objectives.
Making the Call: Pulmonary Hypertension in Cardiac Transplant Candidates

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I hang up the phone and sigh. I’ve just gotten the call that every transplant cardiologist dreads. “We’re coming out with an RVAD,” our surgeon told me, sounding as weary as expected given the operative implications of that statement. The patient who had smiled so broadly today after I told her that a donor heart was available now is now suffering from acute RV failure after orthotopic heart transplant (OHT) and faces a much more difficult road to complete recovery. Even in the current era, acute right ventricular failure accounts for a significant proportion of the morbidity and mortality after OHT. While many factors play a role in the development of acute RV failure (donor organ selection and preservation, ischemic time, donor-recipient size matching), the most prominent is the pre-existence of pulmonary hypertension (PH) in the recipient.

In the early 1950s, Dr. Arthur Guyton informed our understanding of right ventricular afterload sensitivity by varying pulmonary artery constriction in dogs, demonstrating rapid right ventricular failure and systemic circulatory collapse with relatively small acute elevations in RV afterload [1]. These findings were taken together with several early post-transplant deaths due to acute right heart failure in the 1960s to arrive at the notion that the donor right heart is unable to acutely compensate for an acute increase in its afterload when transplanted into a recipient with PH. In 1971, Drs. Shumway and Griepp reported on 26 patients who had undergone OHT at Stanford, finding that the subset of patients with significant PH were at high risk of dying early from acute RV failure [2]. This finding was confirmed and the relative risk of PH in OHT recipients refined in multiple successive cohorts. These studies inform the current ISHLT guidelines which list a PVR >5 Wood units, PVRI >6, or transpulmonary gradient (TPG) >15mmHg as relative contraindications to heart transplantation [3]. Interestingly, pre-transplant diastolic pulmonary gradient (DPG), a recently proposed marker for pre-capillary PH, did not predict post-transplant outcome in large analysis of the UNOS database [4]. Importantly, there is no value of PVR or TPG which predicts freedom from post-OHT RV failure – there is incremental risk with any degree of elevation in RV load.

For patients with left heart failure (the most common indication for OHT), PH develops for three broad pathophysiologic reasons that are believed to develop in temporal succession. First, elevations in left atrial and pulmonary venous pressure can cause passive congestion of the pulmonary vasculature and elevated pulmonary arterial pressures. Furthermore, as pulmonary venous pressure rises, the pulmonary vasculature become less compliant (“more stiff”) leading to an increase in pulsatile load for any given resistance and causing further elevations in systolic and mean pulmonary arterial pressures. Pulmonary edema itself may also elevate PVR. This passive, or post-capillary, PH
is often remedied by diuretics, or the administration of inotropes or vasodilators which unload the left heart and subsequently the pulmonary vasculature. However, the pulmonary vasculature undergoes more substantive physiologic and pathologic changes with prolonged exposure to elevated pressure. Early in the course, pulmonary vasoconstriction occurs due to a reduction in nitric oxide levels and increases in endothelin-1. Later though, pulmonary vascular smooth muscle hypertrophy and changes in vascular wall thickness arise. Often in the setting of a patient with PH being considered for OHT, pharmacologic challenges are performed in an attempt to differentiate those with reactive or “reversible” PH (thought due to pulmonary vasoconstriction/congestion) from those with “irreversible” PH. Various agents have been studied and are employed for these challenges (sodium nitroprusside, milrinone, and prostaglandin E1 being the most common) with little consensus on which is most effective in reducing pulmonary pressures or (more importantly) provides the best prediction of post-transplant outcomes. However, even patients with fully reversible PH (defined by the ISHLT as achieving a PVR <2.5 while maintaining a systemic systolic blood pressure >85mmHg) still may have a poorer post-transplant prognosis than those without PH [5].

Mechanical circulatory support has expanded the treatment algorithm in OHT candidates with PH, and has challenged the concept of “irreversible” PH. For patients with PH that do not respond to aggressive medical care and/or vasodilator challenges, multiple studies have found that pulmonary pressures and PVR decline with the prolonged effective unloading provided by left ventricular assist devices [6]. In a select cohort of 60 patients, we found that all measures of RV load improve over the first 6 months of LVAD support, and continue to improve over the ensuing 2 years. However, a subset of LVAD-supported patients continue to have elevated pulmonary pressures precluding OHT. In these patients, we have found that the use of sildenafil is associated with meaningful and more rapid reduction in PVR and pulmonary artery pressures [7]. The upcoming SOPRANO trial will investigate the role of macitentan, an endothelin receptor antagonist, in LVAD-supported patients with persistent PH [8].

For patients with pre-existing PH and post-OHT RV dysfunction, aggressive inotropic and potentially temporary mechanical support of the RV is required. With the reduction in pulmonary venous pressures provided by a functional left ventricle and reversal of the ischemic and preservation injury over time, the RV load may improve and RV dysfunction resolve. Multiple centers have reported on the use of oral sildenafil, systemic prostaglandins, or inhaled prostacyclins in this setting with varying success [9].

In conclusion, the assessment of PH in the heart transplant candidates is as crucial as it is nuanced. The failure to appreciate the importance of pulmonary vascular load or to appropriately delineate the underlying pathophysiology of PH in these patients may set patients up for RV failure and death early post-transplant. Conversely, an appropriate diagnostic evaluation and therapeutic approach to PH may allow the successful provision of the life-saving gift of cardiac transplantation in these patients. To avoid getting the dreaded transplant RV failure call after transplant, transplant cardiologist and surgeons have to be sure to make the right call before transplant for patients with PH.

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The Challenges of Launching a CTEPH Program

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Chronic thromboembolic pulmonary hypertension (CTEPH) continues to present a diagnostic and therapeutic challenge for both patients and physicians – with issues ranging from delay in appropriate diagnosis, inadequate use of screening tools and determination of appropriate treatment strategy. Even though CTEPH remains a rare disease, the delivery of its care has been transformed from experts at highly specialized centers to a broad spectrum of providers with varying degrees of expertise, leading to non-uniformity of care. As a result, early access to expert centers and assurances of optimal patient-care have become increasingly relevant concerns.

The University of California at San Diego (UCSD) continues to lead the expertise in care for patients with CTEPH worldwide. At Allegheny General Hospital (AGH, Pittsburgh), we started our advanced pulmonary hypertension (PH) program over a decade ago. As the PH program grew, we realized the gap for access to treatment options for CTEPH patients who could not travel across the country for consideration of surgery for were considered ineligible for curative pulmonary thromboendarterectomy (PTE). As a result, we decided to invest in the mission to become a treatment center for CTEPH, offering a multidisciplinary team approach to it’s diagnosis and management. Now that our CTEPH program is three years since inception, the experience of launching a competitive program in a region with multiple PH referral centers has been quite a learning experience!

As our cardiothoracic surgeon, anesthesia and critical care team, radiologists and interventional cardiologists embarked on enhancing their training for PTE surgery, balloon angioplasty and post-operative care, the medical half of the team focused on the diagnostic evaluation and patient screening for surgical candidacy. Patients who were to undergo PTE surgery at AGH were carefully chosen and in the first 2 years, any patient deemed high risk was referred to UCSD for surgery.

In launching this program, our biggest challenge lay in the fact that this is a referral based practice and we continue to see significant delays in time to diagnosis. Although the role of medical therapy in CTEPH is clearly limited to inoperable patients or those with persistent PH post-surgery, community practitioners are increasingly using the drugs as first line treatment and referring patients if there is inadequate response to therapy. Many patients are deemed inoperable without being given the benefit of doubt of being evaluated by a CTEPH center. Another major issue continues to be the relative dependence on CTA (over a V/Q scan) as a screening tool for CTEPH. Although an excellent tool for acute PE, chronic thromboembolic burden may be missed by a radiologist who is not specifically looking for it in a CTA. For the patients who do get a V/Q scan, there is often confusion on what a ‘matched defect’ or the interpretation of ‘low probability for acute PE’ means in terms of CTEPH. After having been misled by interpretation of these scans from outside hospitals, it is tempting to try and repeat all the studies within our center – but this has to be balanced by risk of
radiation and contrast to patients as well utilization of health care dollars. Coordinating travel and dealing with out of state insurance has been another time consuming factor. And last, but not the least, the challenge of marketing our program in the north east US has proven to be trickier than we thought!

We have had great clinical success with our first 20 PTE patients. This has only been made possible by utilizing a multidisciplinary, team based approach to this complex disease. We hope to continue to contribute to the first US CTEPH registry launched by UCSD last year. This registry has been created with the mission to promote a greater understanding of the prevalence, pathophysiology, evaluation, and treatment of patients with CTEPH through shared information, education, and collaborative investigation among PH centers of excellence throughout the U.S. Wish us luck!

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Take A Deep Breath: A Patient’s Perspective on the Diagnosis of CTEPH, Surgery and Life Beyond

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CTEPH Patient
PTE Operation 2012

Truly, my story begins at birth. But since that was so long ago, I won’t bore you with that level of detail. However, after hearing this story most people respond by asking, "How did that happen?!" and we end up going back to 1967. But for now, I'll start in 2007...

Around the time I turned 40 in 2007, I began having intermittent periods of shortness of breath. I assumed it was caused by an allergen and ignored the symptoms that would years later lead to one of the scariest moments of my life.

In early 2011, at the very young age of 44, I experienced this same shortness of breath accompanied by a wet cough. My PCP’s diagnosis was bronchitis, so she put me on antibiotics and prescribed an inhaler. After a few weeks and two more courses of antibiotics with no improvement, my shortness of breath became severe - a conversation or short walk across the room took my breath away. I felt pangs of jealousy watching people casually strolling down the street – that simple action seemed like an insurmountable and exhausting task.

I stubbornly agreed to visit the ER at a local hospital, thinking they would discover some extreme environmental allergen that I was reacting to. Instead, they told me - and I will never forget these words as long as I live - that I had "large and numerous clots" in my lungs.

Now, I had watched enough episodes of the TV show "ER" to know this was not good news. In fact, had I not had a friend just survive the discovery of PE’s, I would have thought it was a death sentence. I was quickly transferred to a larger center for further evaluation and consideration of what the treatment might be. My best friend since childhood, who lives near me, called my family in Phoenix and, as gently as possible, explained the situation. They arrived the next day. That was one of the moments when I realized the severity of my condition.

However, the truly defining moment occurred at the first hospital after being transferred from the ER to their cardiac unit. The doctors and nurses were gathered outside of my room discussing my transfer to the larger center. The nurse came to my bedside and very matter-of-factly stated, “They want to take you by helicopter.” Her words floated above me, what little breath I had halted, and I felt the color leave my face. All I could manage was turning to my best friend, who was thankfully by my side, as I mouthed, “Ask her why.” In retrospect, the reason is obvious, but at the time it was a cold slap of reality.

I spent 12 days in the next hospital during which I was diagnosed with chronic thromboembolic pulmonary hypertension (CTEPH). I was placed on blood thinners and a filter was placed in my inferior vena cava to stop any further clots from reaching my lungs. It was discovered that my
pulmonary pressures were very elevated (90/60), and my right heart was quite enlarged. I had a number of tests including V/Q scans, CT scans, a right heart catheterization, echocardiogram, and a pulmonary angiogram.

As it turned out, my doctors felt that the acute clots were not the major issue; it was the chronic clots and subsequent scar tissue that clearly needed to go away! I was sent home on two new medications, Warfarin and Revatio.

During that hospital visit, I met a cardiac surgeon who explained to me that if the clots persisted after being on Warfarin, the next step would be surgery. After a few months and a repeat heart catheterization, it became apparent that my condition wasn't improving and I was scheduled for pulmonary thromboendarterectomy surgery in February 2012.

Mine is a typical American family, so naturally the severity of my condition was never discussed openly. But I could clearly see the worry on the faces of my family members and best friend. We all wore a brave face and carried on like everything was normal. From my point of view, I felt a responsibility to ensure everyone that all was going to turn out just fine – particularly my then 11-year-old daughter. Normalcy was paramount, but inside I was panicked.

I'm no doctor, but I'll do my best to explain the operation. My body was cooled to 65 degrees Fahrenheit to reduce my body's need for oxygen. They perfused my brain to avoid damage (although my smart-aleck friends would tell you it didn't work). The clots were meticulously removed in a five-hour-long surgery.

I'd like to say that immediately upon awaking from the operation I sensed an improvement, but the severity of the procedure took a day or so to recover from. However, after the grogginess passed and I was more physically active, it became apparent that my breathing was normal. (While I typically strive to be unique, this is definitely one of the times in my life when "normal" was GREAT.)

My pressures immediately returned to normal after the surgery, and within a few months the size of my right heart had also returned to normal. There were some notable bumps in the road, when I had fluid accumulation around my heart after the surgery which required drainage but this, I am told, is not uncommon. I was back to work part time in about three weeks, full-time in six weeks. My head was quite foggy for several months after the PTE surgery, and at times, this odd feeling returns (it's a cross between vertigo and a hangover).

Now let's go back to 1967 and how this all began. I have a congenital condition called Klippel-Trenaunay Syndrome (Google it if you want more details, if I tried to explain it this story would be way too long!). As a result, I have arteriovenous malformations (AVMs) in my right leg, which is believed to be the reason that my hip broke so easily when I was 34 years old. Due to complications with the AVMs, after four years of surgeries and embolization procedures I had a full hip replacement in 2005.
Tests have shown no genetic predisposition to pulmonary emboli, so the prevailing theory is that either due to the prevalence of AVMs in my leg, or from the surgeries associated with my hip fracture or both, I began "throwing clots" years ago.

The treatment I received at the first, smaller hospital was excellent; but it was when they astutely recommended I be transferred to a larger, more specialized facility that made all the difference.

Being quickly diagnosed with CTEPH and receiving the appropriate treatment surely saved my life. Knowing that my condition was treatable along with the confidence that all of my doctors exhibited gave me the peace of mind I needed during this inexplicably frightening period of my life.

The impact of this treatment on my quality of life can’t be overstated – and as the single mother of a most amazing, smart, beautiful daughter I need to stick around for many more years! Increased awareness of the diagnosis of this disease and the expertise in medical and surgical treatment really changed my life. But back to today...it has been four years since my surgery and I feel great! I no longer give my breathing a second thought, or worry about not being able to go somewhere for fear that the walk will be too much.

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Influenza Vaccine Update – Episode II, Adults are People Too

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Very little in life is ever simple or clear-cut; that is doubly true when discussing vaccines and transplant patients. Upon further review, there may be benefit to discussing some of the specific options available for influenza vaccination in adults.

The FDA currently has 21 different influenza vaccines licensed for distribution in the US [1]. That’s a bit much to keep up with, even for an Infectious Disease physician, not to mention someone that doesn’t spend all of their waking hours trying to keep track of the differences in flu vaccine between manufacturers. The goal here is to focus on a few key points and try to simplify that list of twenty-one vaccines a bit.

First, for our purposes, we can quietly set aside discussion of the live attenuated influenza vaccines, which takes us down to 19. We can also remove the monovalent vaccines and those in the National Stockpile, as their clinical niche is fairly small. That leaves us with twelve. Nine of the remaining are trivalent vaccines and three are quadrivalent inactivated influenza vaccines (IIV). The quadrivalent vaccines add an additional strain of influenza B, without interfering with the response to the other three antigens/strains [2].

Of the nine remaining trivalent vaccines, one is high dose (see below), one is an adjuvant containing vaccine (see below, again), two are intended for those with true anaphylaxis to egg protein (cell culture-based and recombinant) and the rest are standard dose preparations. There are no recommendations stating a preference for vaccine formulation or individual vaccine as long as the vaccine is licensed for the appropriate group. A detailed table is available from the CDC at: http://www.cdc.gov/flu/protect/vaccine/vaccines.htm.

The high dose (HD) influenza vaccine contains four times the amount of hemagglutinin as the standard-dose (SD). A randomized trial comparing high dose to standard dose in 31,989 adults, 65 years or older, found significantly higher responses and better protection with the high-dose vaccine [3]. Supplementary analysis demonstrated similar efficacy for those with at least one high-risk condition, including immune compromising conditions [4]. Studies in adult stem cell transplant recipients [5] and pediatric solid organ transplant patients [6] are encouraging with some increased responsiveness to the HD vaccine in these populations. Both studies did report an increase in local reactions in the HD versus the SD groups.

The first US seasonal flu vaccine containing an adjuvant (aIIV), under the brand name Fluad® (Novartis), was approved by the FDA on Nov 24, 2015 for persons 65 years of age and older [7]. This vaccine was first approved in Italy in 1997 and is now approved in 39 countries. In a multicenter trial of 7,082 participants age 65 and older, the aIIV was found to be non-inferior to the comparator
(non-adjuvant IIV), elicited significantly higher antibody responses at day 22, but did not meet criteria for superiority [8]. Of note, patients with impaired/altered immune function were excluded from this trial.

The adjuvant (MF59®) is an oil-in-water emulsion of squalene oil that appears to enhance the immune response to antigens [9]. As discussed previously, there have been concerns regarding development of HLA alloantibodies and rejection following the 2009 adjuvanted pandemic (H1N1) flu vaccine [10-13]. The adjuvant used in those reports was the AS03® adjuvant with tocopherol, polysorbate 80 and squalene; different in that MF59® does not contain tocopherol. A randomized trial in 60 adult kidney transplant (KT) recipients reported similar overall immunogenicity, with significantly greater seroconversion in those 18 to 64 years old, and no increase in HLA alloantibodies in those who received the MF59® adjuvanted vaccine [14]. An earlier prospective study of 58 heart transplant patients, 21 given MF59® adjuvanted flu vaccine versus non-adjuvanted IIV reported equivalent effect and no increased risk of acute myocardial rejection [15]. Additional studies of MF59®, largely in renal transplant patients have also reported no increased risk of rejection/graft dysfunction [16-18].

In summary, despite the somewhat confusing array of available influenza vaccines, vaccination is still recommended for all organ transplant recipients. There are no indications that the high dose vaccine is unsafe for organ transplant recipients, and it may provide increased protection in those 65 years and older. The adjuvanted influenza vaccine shows promise and the available data are encouraging, for this recently FDA approved flu vaccine. For North America, the 2015-16 influenza season is not yet over, and it is not too late to vaccinate against the flu. In addition, based on CDC reports to date, this year’s vaccine appears to be a very good match with the circulating strains.

Disclosure statement: The author has no conflicts of interest to disclose.

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Nicotinamide for Chemoprevention of Cutaneous Squamous Cell Carcinoma in Solid Organ Transplant Recipients

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Immunosuppressed solid organ transplant recipients have a ~100-fold increased risk of cutaneous squamous cell carcinoma compared with the general population. Given that deaths from cutaneous squamous cell carcinoma in the United States white population were estimated to approximate the deaths from malignant melanoma in 2012 [1], it follows that mortality due to cutaneous squamous cell carcinoma would have been even greater among solid organ transplant recipients. A recent large population-based study of cancer mortality in solid organ transplant recipients in Ontario, Canada, found that, of all cancers, skin cancer was responsible for the highest incremental risk of death in solid organ transplant recipients, with a standardized mortality ratio of 29.82 (95% confidence interval, 18.23-46.10) [2].

An exciting advance in the fight against skin cancer was recently published in the New England Journal of Medicine [3]. After showing promise in Phase 2 trials at reducing the number of pre-skin cancers in Australians with sun-damaged skin, oral nicotinamide was found in the Phase 3 trial to be a safe and effective means of reducing rates of developing new pre-skin cancers and non-melanoma skin cancers in a cohort of 386 "high-risk" adult subjects with 2 or more confirmed non-melanoma skin cancers in the previous 5 years [3]. Subjects on oral nicotinamide had a 30% decrease in new cutaneous squamous cell carcinomas compared with those on placebo (p=0.05). Nicotinamide, the amide form of vitamin B3, is a precursor to NAD+ (a co-factor for ATP production) and is hypothesized to exert its anti-carcinogenic effects by increasing cellular energy available for DNA repair, thus mitigating UV-induced ATP depletion and glycolytic blockade.

Although these findings are significant, it should be noted that immunocompromised subjects—including the immunosuppressed solid organ transplant recipient patient population for which we care—were excluded from participating in this trial. Therefore, we must temper any potential excitement about these findings, as it remains undetermined whether they can be generalized to our immunosuppressed patients. Vigorous counsel for sun avoidance and annual total body skin exams remain tried-and-true methods for skin cancer prevention in solid organ transplant recipients.

Future trials that include immunosuppressed subjects are needed to determine whether oral nicotinamide will deserve a place among established skin cancer chemopreventative agents currently available to solid organ transplant recipients—acitretin, sirolimus, capecitabine, and 5-aminolevulinic acid-photodynamic therapy. Acitretin, a retinoid (vitamin A analog), exerts its physiologic effects by binding to a number of specific nuclear receptors; its mechanism in the chemoprophylaxis of skin cancer is largely unknown but may include effects on immunomodulation, induction of apoptosis, cell cycle control, inhibition of ornithine decarboxylase, inhibition of cellular proliferation and
keratinization, and promotion of cellular differentiation [4]. An inhibitor of the mechanistic target of rapamycin (mTOR) pathway, sirolimus can have a secondary protective effect against the development of new cutaneous squamous cell carcinomas when substituted for a calcineurin inhibitor in solid organ transplant recipients’ immunosuppressive regimens [5]. Capecitabine, an oral prodrug of the chemotherapeutic agent 5-fluorouracil, is an antimetabolite that targets rapidly dividing cells [6]. Widely used in the treatment of premalignant skin cancers, 5-aminolevulinic acid-photodynamic therapy utilizes a photosensitizing agent such as 5-aminolevulinic acid that preferentially accumulates in diseased cells and is then activated by light to produce destructive reactive oxygen species selective to the target diseased tissue [7].

Adverse effects of chemopreventative agents can limit their use in solid organ transplant recipients. Long-term high-dose nicotinamide intake has been associated as a risk factor for obesity and type 2 diabetes [8]. Acitretin can cause mucocutaneous dryness, hair loss, musculoskeletal pain, and increased triglyceride levels [9]. Many solid organ transplant recipients have to discontinue sirolimus due to side effects including edema, acneiform eruption, aphthous ulcers, and proteinuria.5 Tolerability of oral capecitabine is limited by fatigue, hand-foot syndrome, diarrhea, and, rarely, neutropenia [6]. 5-aminolevulinic acid-photodynamic therapy shows great promise as an noninvasive means of reversing actinic skin damage in solid organ transplant recipients but can cause pain upon illumination, allergic contact dermatitis, and, occasionally, intensive phototoxic reactions [10].

One final consideration in prescribing oral nicotinamide, the amide form of vitamin B3, as a chemopreventative agent against cutaneous squamous cell carcinoma is that it is presently only available—and regulated by the United States Food and Drug Administration—as a dietary supplement, not as a drug. In other words, unlike drugs, which must be demonstrated to be safe and effective for their stated uses prior to marketing, dietary supplements are neither formally inspected nor approved by the Food and Drug Administration for safety or effectiveness prior to marketing (Dietary Supplement Health and Education Act of 1994, www.fda.gov/Food/DietarySupplements). Therefore, it may currently be impossible to predict the relative efficacy of nicotinamide for skin cancer chemoprevention between different formulations unless it becomes regulated as a drug.

Disclosure statement: The authors have no conflicts of interest to disclose.

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The downside of proposing an approach to a contentious topic is that there will be no shortage of experts ready to point out the errors of my ways. Alternatively, by the time someone actually proves me wrong, my eloquent discourse will have been long buried in the electronic wasteland of past LINKS issues. So, comfortsed by assured future anonymity, I share my thoughts on the conundrum of clinically silent donor specific HLA antibodies (DSA).

Not long ago, I attempted this and quickly found myself staring at the face of someone utterly confused, yet too generous, or perhaps too afraid to stop me. With that in mind, I will narrow the scope of my discussion to DSAs in the post-transplant recipient, evading issues around pre-transplant DSAs, methodological nuances or non HLA antibodies.

It is safe to say that DSAs negatively impact the allograft (Smith JD et al, 2011). Unfortunately, significant disagreement still exists around how to manage them. To succinctly outline my approach, I will pragmatically attempt to distill the arguments into three main questions: 1) When are DSAs significant? 2) How do DSAs affect the allograft? and 3) How do you “treat” them?

Firstly, the presence of DSAs does not necessarily equate to “activity”. Unfortunately, measuring their clinical relevance by using methods such as cytotoxicity crossmatch, complement fixation (e.g. C1q assay), IgG subtyping have yielded inconsistent results (Campbell P, 2013). As such, although I do sometimes use these assays, I continue to use Luminex Single Antigen Bead testing (SAB) thresholds in most cases, with a cut-off of 1500, at least until more data becomes available (Gandhi et al, 2011).

As to the second question, I will make a general distinction between the impact of MHC Class I and II antibodies. Again, the data is limited but Class I DSAs appear to be more often associated with acute rejection and Class II DSAs with chronic rejection/CAV (Smith JD et al 2011; Raess M et al, 2013; Topilsky et al, 2013). As such, I generally monitor accordingly, either for acute rejection, with an earlier biopsy and echocardiogram, or for CAV with coronary angiography and IVUS/OCT (Optical Coherence Tomography) if not recently performed. All this presuming again that there are no clinical grounds for other testing.

Lastly, I will start by stating that there is no real evidence to support any interventions in this scenario. Nevertheless, I believe that sound judgement based on understanding of transplant medicine and immunology, can guide reasonable clinical decisions. The main caveat here of course, is to avoid “treating ourselves” and our own uncertainties. My approach would be summarized as
being aware of the issue, monitoring longitudinally and optimizing immunosuppression as appropriate.

As I experience “déjà vu” and cringe at the thought of numerous bewildered faces staring down at the page, I have taken the liberty of drawing a chart that might help illustrate my take on this issue.

Ultimately, as more evidence becomes available, I am sure to revise my approach. In the meantime, I hope this provides “fodder” for collegial discussions, maybe over numerous glasses of red wine. Cheers.

Disclosure statement: The author has no conflicts of interest to disclose.

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THE ASPEN LUNG CONFERENCE 2016 & CALL FOR ABSTRACTS: “Lung Transplantation: Opportunities for Repair and Regeneration” June 8-11, 2016 @ The Gant Conference Center, Aspen, Colorado

Dear ISHLT membership,

We are pleased to announce that the 59th Thomas L. Petty Aspen Lung Conference will be devoted to lung transplantation! The Aspen Lung Conference is one of the most respected and innovative meetings in the North American lung research community at large: With a focus on clinical problems that affect the lung, the Aspen Lung Conference blends cutting-edge basic and clinical research in a setting that facilitates extensive discussion amongst the participants. This is the very first time that lung transplantation will be the topic of discussion. The conference will be organized around a central theme of the life cycle of a lung transplant, spanning donation, explantation, preservation, implantation and finally accommodation. Emphasis will be placed on integration of basic, translational and clinical sciences. The program will be organized into a series of thematic sessions focusing on (i) new concepts in lung allograft preservation and reconditioning utilizing ex-vivo lung perfusion, (ii) adaptive immunity including new arenas in T cell and B cell biology, (iii) host response/innate immune mechanisms, (iv) airway/allograft remodeling and (v) strategic approaches to translating scientific advances into impactful therapy including molecular phenotyping, novel immunosuppression and development of novel diagnostic and monitoring techniques. State-of-the-art speakers will include Mark Gillespie, Shaf Keshavjee, Daniel Kreisel, Jason Christie, Jordan Pober, David Sachs, Souheil El-Chemaly, Sean Colgan, Iwijn De Wlaminck, Harold Chapman, John Belperio, and Vibha Lama. The diverse themes will be reconciled in a concluding Conference Summary presented by Sonja Shrepfer, Associate Professor at UCSF. The overall objective is to assemble thought leaders and learners in transplantation to educate the next generation of scientists and define the next big steps to be taken in the field. We hope many of you will consider submitting an abstract (which can overlap with your ISHLT, AST, or ATS submissions). Abstract deadline is February 14, 2016. For more information, contact: Jeanne Cleary, E-Mail: Jeanne.Cleary@ucdenver.edu or visit our website at www.aspenlungconference.org.

We hope to see you in Aspen!

Martin Zamora (Chair)
Mark Nicolls & Tereza Martinu (Co-Chairs)

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James K Polk, ISHLT and What to do in Washington, DC

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Here are some tips to do while in Washington D.C. ISHLT Annual Conference by following the tenure of James Knox Polk, America’s least known presidents of all time.

**Attend as many sessions/events to learn and meet many people:**
James Knox Polk was the eleventh United States President from 1845 to 1849. He was born on 1795 in Mecklenburg County, North Carolina. Polk achieved nearly everything he stated he wanted to in his platform; however, some critics consider Polk as “the one who missed great opportunities.” I highly encourage you to not be like Polk, but read the annual conference agenda and attend as many of the events as you can to not miss any opportunity to learn and meet those that are just as passionate as you are about your field.

**Ask how you can get involved in ISHLT:**
When Polk was 18 years old and unable to read or write, but he made up for lost time when at 20 years old he had passed the prerequisites to enter the University of North Carolina where he graduated and was considered an all-around scholar. Like Polk, I encourage you to get involved an area that is your passion. Polk pursued his passion of learning and with that being said, you should get involved in ISHLT to not only learn but offer your knowledge and experience.

**Meet Experts face-to-face:**
Polk was a “dark horse” candidate when he ran for President and won in 1844. He was not well known when he came into office, and literature suggests that he was somewhat “reserved.” Our ISHLT experts and speakers are members who open themselves to questions and thoughts. It is not uncommon for “newer” members to introduce themselves to the experts and interact. Please take this great opportunity to meet those who continue to pioneer the path of heart and lung transplant.

**Learn in a new Space:**
Under Polk, the United States grew by more than a million square miles, adding territory that now makes up the states of Arizona, Utah, Nevada, California, Oregon, Idaho, Washington, New Mexico, Wyoming, Montana, and Colorado. Washington D.C. is a living history book full of powerful moments and memorable experiences. When you’re not in sessions we hope that you will be able to explore America’s educational and entertaining venues, world-class museums and monuments, unique neighborhoods, top-rated restaurants, gorgeous parks and gardens, and endless performing arts choices.

Disclosure statement: The author has no conflicts of interest to disclose.
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EDITOR’S CORNER: Unfinished Defeated Presidents Because They Never Quit

Richard Milhous Nixon was born in Yorba Linda, California on January 9, 1913. As a result of struggling in poverty with his family, Nixon developed focus, tenacity and ambition early on and worked his way with brilliance through Whittier College and Duke Law School. While working as an attorney in Whittier, California, he married Thelma Catherine "Pat" Ryan in 1940 and had two daughters, Patricia and Julie. After serving as a Navy lieutenant commander in World War II, he was elected to the House of Representatives and then to the Senate in California. In 1952, Eisenhower chose Nixon to be his Vice-President, a position he held for eight years. Nixon lost to JFK by a razor's edge in the 1960 Presidential race, but in 1968 he ran again and became the 37th President of the United States. When he took office, Nixon inherited domestic mayhem of anti-Vietnam war movements highlighted by demonstrations and protests with college campus riots, burnings and bombings. Also, tensions between blacks and whites had escalated with explosive civil rights issues focusing on desegregation and busing. Despite the ravages of civil unrest and an unpopular war a half a world away, despite the Nixon caricatures, Nixon jokes, and stereotypes with the nickname, Tricky Dick, and despite an initial defeat to the presidency and losing the election for governor of California in 1962 by a wide margin, he became the Lazarus of American politics.

During his presidency, Nixon brought us together, ended US involvement in Vietnam, eliminated the draft, waged wars on cancer and drugs, enforced desegregation and established the Environmental Protection Agency. Most importantly, he traveled halfway around the world to meet the leaders of China and concluded an arms agreement with the Soviet Union. He was an ardent believer in decentralization, thus Nixon strongly argued that the best way to get people and nations to behave responsibly was to give them responsibility both domestically and internationally. In 1972, he was re-elected President by a historic margin such that no one could have predicted that he would be the first to resign from office two years later.

The event leading to Nixon’s downfall began on June 17, 1972 when a break-in was discovered at the Democrats’ National Committee headquarters at the Watergate complex in Washington DC. News media and Congress linked the break-in to members of Nixon’s re-election campaign. But Nixon and his staff denied any knowledge of the incident then committed illegal acts in an effort to cover up the truth. However, evidence slowly amassed that implicated the White House. Threatened with impeachment, President Nixon resigned in disgrace on August 8, 1974. On September 9, 1974, President Ford granted Nixon “a full, free and absolute pardon” for all offenses he might have committed against the United States. Afterwards he wrote his Memoirs and published books on political and world affairs. In his later years, he gained appreciation as an elder statesman and was always there as the sage advisor to Presidents Carter, Reagan, Bush Sr and Clinton during their administrations. He revisited China and traveled to the former Soviet Union. On April 22, 1994, Nixon died in New York City from complications of a stroke. Nixon left us with “A man is not finished when he is defeated; he’s finished when he quits.”
Gerald Rudolph Ford was born Leslie Lynch King, Jr in Omaha, Nebraska on July 14, 1913. Because his biological dad was abusing his mother physically and mentally, she took her two-week old son by train to be raised in Grand Rapids, Michigan. Two years after her divorce she married Gerald R Ford and they immediately started calling her son Jerry Ford. Ford attended the University of Michigan as a college football star majoring in economics and political science, then earned a law degree from Yale. After naval combat duty in WW II, the likable attorney returned to Grand Rapids. He was elected to Congress in 1948. He secretly married Elizabeth (Betty) Bloomer Warren, a divorcee who had studied dance and been a model in New York City then worked as a fashion coordinator in Grand Rapids. They moved to Washington D.C. then eventually to Alexandria, VA and lived there until Ford entered the White House. He became House Minority Leader in 1965. In 1973, when Nixon’s Vice President, Spiro T Agnew, was forced to resign for accepting bribes from building contractors while governor of Maryland, Nixon picked Ford as the new Vice-President. The following year, Nixon resigned over the Watergate scandal and Gerald Ford became the 38th President of the United States. He was the only President who was never chosen by the American people to be either President or Vice President. After taking oath of office on August 9, 1974 President Ford said, “Our long national nightmare is over.” Shortly thereafter, he granted Nixon a “full, free and absolute pardon.” That act may have cost him the election of 1976. He explained his decision as a way to bring the country together and move beyond the turmoil of Watergate. Though few questioned Ford’s integrity, many at the time were angered by his action. Nonetheless, he was convinced that this was right thing to do, the nation needed "A Time to Heal."

As President, Ford presided over a period of steadily improving relations with the Soviet Union, reaching agreement on limiting nuclear arms. He was decisive using his power to veto more than 50 bills passed by a Democratic Congress. He established the Nuclear Regulatory Commission to oversee the country’s civilian nuclear industry. However, his presidency was plagued by runaway inflation and high unemployment and by international tragedies. Although he oversaw the final pullout of American troops from Vietnam after years of bloody war, the last American advisors in Vietnam were forced into a desperate and chaotic evacuation and the Middle East oil crisis created an energy shortage. His greatest disappointment was the collapse of non-Communist Indochina. Following defeat by Jimmy Carter in 1976, Jerry and Betty Ford moved to California and built a home in Rancho Mirage. Gerald Ford died on December 26, 2006 at his Rancho Mirage home of arteriosclerotic cerebrovascular disease and cardiac arrest at the age of 93 years and 165 days, making him the longest-living President in history by 45 days over Reagan.

James Earl Carter, Jr was born in Plains, Georgia on October 1, 1924. He grew up on his family’s peanut farm as a studious child and worked at his father’s store. After completing high school, he studied engineering at the Georgia Southwestern College and the Georgia Institute of Technology (known as Georgia Tech today) and earned a B.S. degree as a top graduate from the United States Naval Academy in Annapolis Maryland in 1946. He married Rosalynn Smith, whom he had known from childhood on July 7, 1946. After rising to the rank of lieutenant in the Navy as a submariner, Jimmy became part of the nuclear submarine program and did graduate work in reactor technology and nuclear physics. He served as senior officer on the second nuclear submarine, the Seawolf. When his father died, Carter felt it necessary to return to Georgia to run his family’s peanut farm against Rosalynn’s wishes. He successfully expanded the peanut business to shelling, supplying and warehousing, and with hard work, he became prosperous.

He entered politics as a senator and was elected Governor of Georgia in 1970. Carter’s most prominent contribution as governor was increasing efficiency by reducing the number of state agencies from 300 to
22. He appointed a number of blacks to state jobs and ordered that a portrait of Martin Luther King, Jr be placed in the state capitol building, a gesture he felt was long overdue. He represented a new generation of southern Democrats and said "The time for racial discrimination is over."

In 1976, as a Washington outsider untainted by the insider politics of the Nixon era, Jimmy Carter captured the Democratic Presidential nomination. His earnest and soft-spoken oratory, deep religious faith, and down-to-earth policies impressed a jaded electorate, especially his vow that "I'll never lie to you," Voters believed him and he defeated President Gerald Ford in the election. When sworn in as the 39th President of the United States, in keeping with his roots as a farmer, he chose to walk in the inaugural parade rather than ride in a limousine. His greatest success as President was bringing the leaders of Israel and Egypt together for peace talks at Camp David, Maryland in 1979. Carter pardoned the Vietnam draft dodgers, decreased the federal budget deficit, deregulated domestic oil prices and formed a Department of Energy. Further, he improved bureaucratic efficiency and placed many women and racial minorities in senior government jobs. During his presidency, his troubles exceeded his successes. Carter never got along with Congress and he was blamed for high interest rates, inflation and a gas shortage. His accomplishments were completely darkened when the Iranians seized the United States embassy in Tehran and held Americans there, hostage. Carter’s inability to release them by a failed rescue attempt costing the lives of eight American servicemen and one Iranian civilian or otherwise, frustrated the public, who rejected him overwhelmingly in the 1980 election. The American hostages were freed after 444 days of captivity just minutes after Ronald Reagan was sworn in as President.

After he left office, Carter used his negotiating skills to solve disputes in Somalia, Haiti and North Korea. He wrote several books, established the Carter Center at Emory University and the Jimmy Carter Library and Museum in Atlanta and worked for the Habitat for Humanity. In 2002, Carter was awarded the Nobel Peace Prize for his lifetime dedication to peace, democracy, human rights and social development. Today, Jimmy Carter remains with us in the news with his recent diagnosis of metastatic melanoma involving his liver and brain. He underwent surgery for a liver mass, radiation treatment to the four lesions in the brain and targeted immunotherapy with pembrolizumab. Pembrolizumab is an immune checkpoint inhibitor that targets the programmed death protein 1 (PD-1) receptor and its ligand, PD-L1, which can result in expansion of intratumoral T memory cells. Pembrolizumab has been approved by the FDA for unresectable or metastatic melanoma and more recently for patients testing positive for the PD-L1 protein with metastatic non-small cell lung cancer. Jimmy Carter’s best quote today is "America did not invent human rights. In a very real sense... human rights invented America."

Disclosure statement: The author has no conflicts of interest to disclose.

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