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REFLECTIONS ON TECHNOLOGY AND ITS IMPACT ON CARDIAC PATIENT CARE

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When I started my cardiology practice in the mid-1980s, heart disease was deadly. The mortality and morbidity rates were dreadful. Countless patients experiencing their first heart attack died soon after admission. Our ability to open the freshly occluded artery was nonexistent. Permanent damage was inevitable. If patients survived, they were often left with a damaged heart muscle. This led to heart failure and significant disability. Return to work was sometimes not possible, recurrent admissions were likely and fatal arrhythmias often led to sudden death. The statistics were poor; 50% of patients who had a major heart attack died within two years.

In 2017 diagnoses, treatments and prognoses are remarkably different. If the patient makes it to the hospital, early death is rare. The ability to open the artery quickly prevents major damage. Treatment of the damaged muscle following a heart attack affords recovery. The two-year mortality has fallen from 50% to less than 10%.

Currently surgeons repair or replace heart valves with very low mortality and restore their patients to a functional life. The current advances in these artificial valves make them durable; they last for decades. Prior strokes associated with these valves are almost nonexistent.

Through research and technological advances, we now understand the etiology of heart disease. We have made major advances in treatment for various causes of heart disease i.e. hypertension, diabetes, hyperlipidemia, and obesity. The incidence and prevalence of smoking, known to increase the risk of heart disease, has progressively declined. New medications have significantly reduced mortality and morbidity. Medical devices allow rapid opening of occluded arteries, temporary support of the damaged heart is now possible, stenting of arteries prevent damage with rare reocclusion, defibrillators to prevent sudden death, and biventricular pacemakers strengthen the heart muscle. Artificial hearts, once a pipedream, are a reality and are implanted in patients for whom other modalities have failed.

The list goes on. New imaging techniques, such as sestamibi imaging or PET scans, can now assess real time blood flow to the heart; and we can predict recovery from damage with these new scans. Better assessment of valve function guide physicians toward more successful treatments. We now have techniques to ablate common rhythm disturbances (that were previously unsuccessful) or when medications caused serious side effects.

Much of this progress is attributable to strides in technology. Research and development, clinical trials and the introduction of these diagnostic and therapeutic modalities into mainstream medicine is nothing less than astonishing. We have changed the course of many cardiac diseases in less than three decades resulting in better acute and chronic outcomes. Has technology provided us with the long sought after cure to heart disease?

In my view, the answer is yes and no. As I contemplate this progress, it is impossible to ignore the fact that unintended consequences occur side-by-side with these advances. I will introduce this topic with a common teaching strategy that I use with my residents.

I start by explaining the “old fashioned way” of evaluating a patient. When I was taught the art of medicine three decades ago there was a classic method of assessment. I was expected to do a thorough history, a detailed exam, to review pertinent laboratory data and then present my findings to the attending physician. A differential diagnosis was offered, a treatment plan initiated and then a reassessment of the plan occurred to determine if it was working. There was a logical flow which forced one to gradually establish the ultimate plan.

Next, I relate how several presentations and residents’ approaches in recent years have changed. Currently residents present all kinds of “data” such as: EKG results, CAT scan reports, blood tests, cardiac echo, and stress test findings. Then they ask me for my opinion. This is, in essence, a “technology diagnosis.” To my dismay, they failed to take that important history and to look for clues during the exam. They barreled ahead directly to “the data.”

My response? I usually pause long enough to make them feel a bit uncomfortable. I then ask, “Why did the patient come to the hospital?” While numbers and images are crucial, they are meaningless unless placed in the context of the patient. The same data set may have completely different implications depending on the presenting problem. Typically, it takes a couple of minutes for the residents to realize that they had left the patient out of the picture.

Technology-driven data are easier to analyze than a patient. Unfortunately, in the process, we lose our connection with the patient and he or she becomes a “case” rather than a person. We may forget that we cannot “cure the scan.” Psychosocial issues (e.g. depression, job loss, marital conflict) which could contribute to the problem are overlooked. We ignore the fact that the patient’s perception of his illness impacts diagnosis and treatment. In essence, we overlook the patient when we focus on curing rather than treating. Cure is wonderful but often inaccessible. Thus, we need to treat the whole person.

Another disheartening example is when I ask residents whether the patient has heart failure. They often respond with the patient ejection fraction, which is a measure of heart function. I then repeat the question, “Does he have heart failure?” Heart failure is a clinical diagnosis, including: shortness of breath, fluid on the lungs, an abnormal chest X-Ray. It isn’t a number.

Depersonalization is exacerbated by insidious changes in the health care system. Technology engenders specialization and sub-specialization; multiple doctors meet the same patient. Inevitably, poor communication between the doctors ensues when they work various shifts. They are too busy to meet with each other directly. Texting between doctors is the “new normal” but the context of whole patient care is lost. Physicians no longer meet in the lunch area and often no longer even know their counterparts. The doctor responsible for the patient in the outpatient setting (who often knows the patient for years) rarely comes to the hospital, as was once the case. The patient ends up with multiple recommendations that don’t add up or fit together. For example, a patient may visit five specialists who collectively prescribe ten prescriptions. The way the health care system is organized and run de-emphasizes the patient who ultimately suffers.

Another aspect of technology, the Electronic Medical Record (EMR), has altered the practice of medicine as well. On the upside, sharing data securely and rapidly has the potential to improve care and optimize safety. Medication interactions are detected, prescription errors avoided and, most importantly, various doctors have real-time access to updated charts.

However, this communication technology sparks some serious fallout. All doctors face time constraints secondary to decreasing reimbursements, large patient volumes with fewer physicians available. This translates into less face time with the patient. Prior to the EMRs, I usually spent 2/3 of my time with the patient and 1/3 documenting the encounter. Now, those numbers are reversed. I interact more with my

computer screen than the patient. There is a “disconnect” between the patient sitting in front of me and the requirement to type into the computer. Patients feel more detached from us while we are charting about them. Regrettably, we may also feel less engaged with them. The doctor-patient relationship has always been a source of satisfaction for me and I do not wish to sacrifice it in the name of progress. While some “chat” with patients online I still prefer to telephone the person at home.

Clearly, technology has greatly expanded life spans in just 30 years. Presently, I have hundreds of patients between 85-95 years old who are alive, active and able to engage with their environment and families. I have one 107 year-old patient who walks into my office and discusses current politics. While progress is undeniable, it introduces new problems as we treat an aging population. Perhaps it is time to weigh the gains against the losses.

Another thorny issue is that we aggressively keep people alive. Modern medications, defibrillators, ventilators, and dialysis prolong life but as diseases advance they often fail to provide health, in the broad sense of the term. As young physicians focus on “curing” and measure success based on “the numbers” they may lose sight of the patient who is slowly dying and is unsure about his or her future.

The art of sharing with the patient and family the fact that we cannot restore well-being is a complex task that requires sensitivity and refined communication skills. We continue to treat the disease as the patient deteriorates despite “good numbers.” For example, I may examine an elderly man whose blood work, EKG and chest X-Ray are normal. “His chart” looks good but he doesn’t feel well. He is slowly losing function and hope as he faces recurrent hospital admissions. In such cases, hospice is the best next step. Rather than stop treatment we change our goals. Providing comfort and preparation for our dying patients is a compassionate path at the end of an incurable disease. We need to uncouple our reliance on the technology for keeping people alive and return to the role physicians previously played when therapeutic options were limited or nonexistent. Helping people die with dignity in the light of love from their families is a form of therapy that all physicians, not only cardiologists, need to learn in addition to staying updated about the latest technological advances.

How can we accomplish this? Medical schools are beginning to focus on patient-centered care. Mindfulness may help trainees realize the role stress plays in their lives as well as their patients.

Mindfulness also helps them connect to their patients better, be more balanced emotionally and be compassionate. Including terminal patients’ issues into the core curriculum more directly may help as well. *The most important tool will be seasoned physicians who serve as role models*. New doctors need to see it to believe it. One of my favorite experiences is when I take residents into a family meeting to address end of life issues. When they absorb this vital skill they start to view themselves more as purveyors of

human caring than technocrats who hold a hand of numbers like a deck of cards. Mentoring is the most effective way to change their perspectives on their chosen life profession.

As is obvious, we must accept and embrace techniques that improve patient longevity and quality of life. Equally important, we need to reassess the unintended consequences and make the necessary adjustments to care for our patients - the ultimate goal of our profession. ■