

Prognostic Implications of Myocardial Infarction and Coronary Stenting Among Politicians

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RECENT NEWS REPORTS AND DEBATE commentary have focused, among other important issues, on the cardiovascular health of several current presidential contenders. Bernie Sanders had a recent myocardial infarction (MI), underwent urgent coronary stenting and returned to a vigorous campaign schedule within a few weeks. Mike Bloomberg had a stent procedure in 2000 and has apparently done well since then. Both candidates, now in their late 70s, have cardiac histories which raise concerns regarding their overall health risk, their fitness for high office and their likelihood of surviving a grueling four-year term.

Coronary artery disease and acute MI are not new among our political leaders. President Dwight Eisenhower had what was described as a “massive anterolateral wall MI” while playing golf in Denver during his first term as president in 1955. He was 64 years old and had been a four-pack per day smoker for more than 30 years. He was treated by the pre-eminent Boston cardiologist Paul Dudley White and made a seemingly uneventful recovery, returning to golf within five months. Treatment at that time was conservative by present standards and included four weeks of bedrest with IV heparin and oxygen followed by another three weeks of home convalescence before returning to work. At a subsequent American Heart Association national meeting, Dr. White described the important risk

factors for myocardial infarction: older age, male gender, robust stocky build, active, ambitious personality, heredity and cigarette smoking. He added that, in his opinion, golf was not a risk factor and likely forestalled the risk of a cardiac event by 5–10 years. Eisenhower went on to complete a second presidential term without additional cardiac problems. He was not free from further cardiac events, however, and had a total of seven MIs and multiple cardiac arrests before dying from congestive heart failure at age 78, 10 years after his presidency.¹

Lyndon Johnson, a three-pack per day smoker, also had a heart attack in 1955, at age 47, while serving in the Senate. He went on to serve as both President and Vice President without further cardiac events, but then had four more heart attacks after leaving office in 1969. He died shortly thereafter in 1973 at the age of 65.

Former Vice President Dick Cheney, another heavy smoker (2–3 ppd) with a strong family history of premature coronary artery disease, had his first heart attack at age 37 while campaigning for Congress. He went on to have a total of five heart attacks and benefited from just about every cardiac procedure, device and technology, including bypass surgery, coronary stents, a cardiac defibrillator, a left ventricular assist device (LVAD) and ultimately a cardiac transplant in 2012 at age 71. He is alive today, 11 years after leaving office.²

Bill Clinton also had a strong family history of heart disease and even with the best care he ignored many of the warning signs during his presidency, according to interviews in the general press. After leaving office in 2001, he developed severe angina and underwent quadruple vessel bypass surgery in 2004. He subsequently adopted a vegetarian lifestyle and lost considerable weight but, in spite of that, he required additional stent placement in 2010. George W. Bush also had a stent procedure shortly after leaving office in 2009. In fact, only one president, Warren G. Harding suffered a fatal heart attack while in office. He was 58 years old.

So what can we expect for our present political leaders in the current era where coronary stent placement is the standard of care for acute MI and unstable angina? Clearly there are immediate benefits from coronary stenting both in terms of survival and reduction in infarct size and many patients return to a full and active lifestyle within a few weeks, as did Bernie Sanders. But stent placement does not confer freedom from future events. In fact, one in five stented patients will experience a major adverse cardiac event (MACE) within five years, including cardiac death (5.7%), recurrent MI (6.9%) and need for a repeat revascularization procedure (13.1%). Between years 1 and 5, the annual rate of target vessel revascularization is about 2% per year.³

Thus, our current group of candidates is not out of the proverbial woods

yet. Age alone is a significant cardiovascular risk factor and affects a majority of the current candidates, including the President. Added to that is the significant stress involved in a contentious political campaign and an order of magnitude more as president. On the plus side, however, are the advantages of close medical follow-up and ongoing advances in cardiac surveillance and treatment, which will likely have a favorable impact on survival, although not necessarily event-free survival. In the final analysis, none of us can predict the future health of any of our political candidates, but voters should not lose heart, for if recent history is any example, these politicians are survivors. ❖

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Are We Right When We're Certain? Overconfidence in Medicine

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Why do the overwhelming majority of college professors, medical students, and clinicians rate their skill as "above average?" (Table 1)

Humans can be inappropriately overconfident in our skill, reasoning, and decisions. Overconfidence describes the misalignment between actual competence or accuracy compared to subjective, self-rated expertise.^{1,2} In medicine, overconfidence contributes to poor decision-making, medical error, sub-standard patient care, and increased risk of bad clinical, organizational, and research outcomes. Our objective in this commentary is to explore the cognitive and cultural aspects of overconfidence and its effect on clinical decision-making.

What are the cognitive underpinnings of overconfidence?

The human brain has a limited capacity to perceive and integrate the innumerable stimuli continually presented for analysis. Consequently, we may erroneously fit incomplete, unclear or contradictory data to fit the oversimplified ways we want to see the world.³ For example, we may jump to a too quick conclusion about a positive laboratory result, without looking up its accuracy and examining any disconfirming data. Moreover, these beliefs are often resistant to change, despite contradictory evidence. Overconfidence encompasses a failure of metacognition, or the capacity for self-reflection in recognizing our own deficiencies, assumptions, and biases.⁴

Does Dr. Google facilitate overconfidence?

Today, it is all too simple to "Google" the capital of Alabama or a differential diagnosis of dyspnea with a few taps on the keyboard. This frictionless access to unlimited material may make learners less motivated to gain a deep understanding of the content. Instead of knowing evidence-based antibiotic prescribing guidelines, we tend to remember that online guidelines exist and where to access them.⁵ Self-questioning morphs from "What do I know?" to "Where can I find it?"

While the availability of resources such as UpToDate and Epocrates has greatly enhanced clinical practice, impaired cognition and an "illusion of knowledge" occur when people conflate access to information with understanding information. Studies demonstrate searching the Internet for information can result in exaggeration in self-assessed knowledge for even unrelated domains.⁶ Furthermore, experimental evidence suggests that after Googling answers to questions, many people are convinced they knew these answers independently of

Table 1. Overconfidence in Medicine Examples

Construct	Description
Clinical Procedures	When performing clinical procedures, resident physicians had no correlation between self-rated confidence and supervisor-assessed competence. ¹¹
Diagnostic Ability	Diagnosing vignette cases, physicians made correct diagnoses in 55% of easy cases and 6% of difficult cases even though self-rated confidence was similar for both easy and difficult cases. ²
Ultrasound Imaging	For difficult ultrasound cases, the least experienced and most inaccurate clinicians were most overconfident. ¹²
Diagnostic Certainty	Among physicians self-rating their diagnostic certainty as "definite" antemortem, 46% of cases were misdiagnosed at autopsy. ¹³
Cancer Diagnoses	When asked to diagnose melanoma, dermatologists were "confident" in 55% of cases, but were incorrect in 30% of these diagnoses. ¹⁴
Teaching Ability	Ninety-four percent of professors rated their teaching ability as above average. ¹⁵
Medical Student Exam	Medical students' self-assessment of anatomy knowledge correlated weakly to actual performance. ¹⁶

the resource, termed an exaggerated "cognitive self-esteem," a marker of overconfidence.⁶ Clinicians must remember the existence of unlimited online data is not equivalent to a personal understanding of it.

Who is most at risk for overconfidence?

Individual overconfidence can be situational or a fixed personal trait. Inbred inaccurate self-assessment of ability seems to be more common in those with specific personal characteristics such as level of risk-taking behavior, tolerance of uncertainty, impulsivity, narcissism, arrogance, or complacency. Overconfident physicians seem to be more susceptible than their peers to a "therapeutic illusion" of deciding that a positive outcome is due to their expert decision-making.⁷

Perhaps surprisingly, those with the least ability or knowledge tend to be the most overconfident, termed the Dunning-Kruger effect.^{8,9} In their landmark study, Kruger and Dunning demonstrated that students scoring in the lowest quartile had the largest discordance between actual and self-rated competence.⁹ Thus, the less expert one is at a task, the more likely there will be a mismatch between an inflated

self-perception and actual expertise. This miscalibration renders these lowest performing individuals both error-prone and unaware of their lack of ability.

The prevalence of overconfidence in diverse settings is impossible to determine. The vast literature includes both clinical and experimental studies, widely variable definitions, study populations, diagnoses, contexts, process measures, and outcomes. Yet, most investigators rate overconfidence bias as one of the most common, consequential cognitive vulnerabilities encountered in medicine.^{1,3,4,8}

What are the clinical consequences of overconfidence?

Cognitive biases in thinking, such as overconfidence, rather than a lack of knowledge or experience, may be the most frequent cause of medical error. Overconfident clinicians may oversimplify the complexity of clinical reasoning. Physicians' personal level of confidence influences how often they request additional resources and support from others. When overconfident, physicians may curtail questions about symptoms, abandon or fail to search for relevant medical literature, and order fewer diagnostic tests or consultations independent of whether this high confidence is justified.²

Overconfident clinicians are more likely to discontinue active cognitive reasoning and stop investigating, termed "premature diagnostic closure." Overconfident clinicians tend to downplay or ignore new data which questions their current clinical impression. Furthermore, confirmation bias propels overconfident individuals to search for evidence confirming their existing hypothesis. This error-engendering flaw reflects a failure to ask vital questions, "What else could this be?" or "Do I know enough?"² Uncertainty can be protective, as it may guard against overconfidence and encourages clinicians to continue to keep an open mind.

Underconfidence, or having lower confidence than accuracy, also impairs decision-making and can be equally dangerous. For example, underconfident clinicians tend to mistrust their physical examination skills which can result in overuse of technology, such as CT scans.¹⁰ Indecisiveness leads to unnecessary over-testing or consultations, which may delay appropriate patient care and increase medical interventions and resource utilization.

Knowing what we don't know is critical for doctors. Yet, at times, confidence in our knowledge and insights misaligns with actual knowledge and performance. This miscalibration reflects impaired self-awareness and unwarranted overconfidence. Determining the origin and identifying individuals at a higher risk for overconfidence is difficult. Too commonly, the least experienced or skilled physicians exhibit the most striking overestimation of their own ability. Failure of self-reflection can lead to poor decisions, inappropriate use of resources, diagnostic error and adverse healthcare outcomes for patients and institutions.

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The Perspective of a Human Computer

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MY JOB AS A MEDICAL SCRIBE CAN seemingly be defined in a single sentence: I analyze, interpret, and record the medical charts for patients who walk through the doors of the Emergency Department. Paired with an ED physician, scribes are the flies on the wall, documenting the interaction with the patient. Essentially, acting as walking computers. With a job description which is purely mechanical, I was trained in the same automated manner. After weeks of didactic training, one-on-one shadowing sessions, personal study time, homework, progress quizzes and a final exam, I was finally a trained medical scribe. I learned to listen, consolidate, and type. I was advised on when to pay attention to the patient and when to “tune out.” I learned to filter the patient’s narrative to consist of only what is necessary for the provider to get a concise snapshot of the patient’s story. Despite the automated aspect of my job, the role of a medical scribe requires empathy and sensitivity to recognize human suffering. Successful medical scribes, along with anyone working in the health care industry, understand that health encompasses more than one’s physical condition.

The patients that arrive at the Emergency Department come with a wide range of complaints, from sprained ankles to car crashes to heart attacks. Before meeting the patient, I register both the physician and myself as a part

of their treatment team. The accuracy of my medical chart helps facilitate that a patient receives care pertinent to their condition. The medical chart is my responsibility; therefore the patient is my responsibility as well. In every shift, there is at least one person who

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sticks with you. There was a man with heartburn, who only visited urgent care to please his wife. He collapsed at his car in the parking lot before he reached the entrance of the clinic and was unable to be resuscitated in the ED. Another man was rushed in on a stretcher who had not had a pulse since EMS arrived at the scene. His hand dangling off the stretcher brushed against my stomach as his body was wheeled into critical care. By no means are these cases forgettable.

I was trained to write a medical chart, but not for the potential dark experiences and patients I face in the room.

The first time a patient died before my eyes was within the first month of my training. I was not prepared for the sound of a flat line on the electrocardiogram, or how quickly a patient without blood flow can turn grey. In this moment, shock, empathy and sensitivity fused, striking me so hard it almost knocked me over. In the ED, I am a witness to human suffering in varying degrees of severity. This was an aspect of the job which is excluded from the formal definition. One patient, let’s call him John, is playing in a soccer game when he tripped and rolled his ankle. Another patient, Elizabeth, is sitting at home when her abusive spouse becomes upset and grabs her, breaking her wrist. Two wildly different histories for similar injuries, and both are charted in the same manner. I limit the patient into a component of their parts, allowing providers to better understand how to give them proper care and piece the patient’s broken parts back together. I witness the whole person, dismantling their condition in a sequential manner, from personal to family to social history. Within the medical field this process is efficient, yet still we can also label this method as slightly dehumanizing. It’s a clash which exists across all areas of health care: are we treating a patient or their parts?

The ethical battle between the excitement and organized chaos of the critical care room duels against the looming

recognition that sometimes the human on the table may die in front of you. As a scribe, I input the facts: how many doses of epinephrine were administered, how long has the patient been unresponsive, any and every pertinent detail. As a human, I watch another human being suffer in front of my eyes as I type notes. I hand the distraught spouse a box of tissues and offer a seat. I leave the room, submit my chart, and move onto the next one which is 10 minutes out.

My return home from one of these shifts, especially back to a relatively predictable and stable college environment, can be a shock to the system. Friends ask how the shift went and I must filter my answer. Are they being polite, or do they really want to know that a dead man's hand brushed up against me and I had three patients confess their

suicidal thoughts to me? What do I do when friends are dazed by my monotone voice? In these moments I am caught in this emotional battle of health care. If you feel too much, you become overwhelmed by the uncertainty of mortality and cannot effectively move forward to treat new patients. If you don't feel enough, you are a robot. Physicians are trained over the years to function within that sweet spot; as a scribe I had to quickly train myself to find that similar balance.

Finding the strength to witness, understand, and move forward from the heavy experiences seen in the ED is an essential part of my role as a scribe. Although scribes are not treating patients ourselves, we are part of their care team, responsible for the care patients receive. Despite the deceptively

computational job description, I exist as an essential part of the health care system. I see a wide range of patients, some major and some minor cases, but ultimately, with every patient I am a witness to their pain. My role requires much more of me than the job description; I must find my place in the health care industry, to serve as a member of the care team while maintaining empathy for those being treated. I am expected to be a computer with ears, but I should strive to be more. ❖

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