

Not the Last Word: High-value Health Care and the Assassination of George Washington

Joseph Bernstein MD

Question: Who was the first American president to be assassinated?

If you guessed Abraham Lincoln, you would not be alone, and you would not be entirely wrong either. On April 14, 1865, John Wilkes Booth shot President Lincoln at Ford's Theatre. The president died the next day—the first killing of a president in office. But

Lincoln was not the first president to die at the hands of another. Back in December 1799, two men, no doubt dressed in black, entered Mount Vernon, the estate of former president George Washington. These visitors impaled Washington with sharp objects and stood over him until he bled to death [8].

These men, James Craik and Gustavus Brown, were physicians, summoned to attend to Mr. Washington. All the same, their decision to treat Washington's epiglottitis [18] with draining his blood (and not, say, antibiotics and tracheostomy) likewise drained his last drops of life as well.

Antibiotics were not yet discovered in 1799, effective tracheostomy was not yet invented, and the word was only emerging that blood-letting is absurd [15]. Thus, Craik and Brown were not viewed as criminal assassins. To the contrary, had the concept of "high-value health care" been popular in 1799, Craik and Brown would have worn its crown. The doctors made a timely diagnosis. They abided the standard of care. They executed the treatment plan well, despite the difficulties doing so—as every former intern can attest, it's mighty hard to find a vein in a bleeding patient. In short, they

did everything expected of high-value physicians.

Now, some may object to ascribing "high value" to the care given by Craik and Brown, especially considering that Washington died as a direct result of their actions. Yet some bad outcomes are inevitable. Even with the best medicine, the death rate will remain unchanged: One per person [10]. Thus, the rebuttal argument goes, we should not evaluate the outcome but the effort.

A second but equally important argument is that a patient can thrive despite receiving lower-value medical treatment. Consider Mr. S (my first patient as a third-year medical student on the surgery rotation, circa 1988). Mr. S was admitted to New York Hospital for gastric ulcer surgery after the advice to cut back on spicy foods and to reduce psychological stress did not do the trick. His surgeon removed Mr. S's acid-producing chief cells with a gastric antrectomy, and Mr. S did well. Because Omeprazole was not introduced until 1989, and the infectious etiology of gastric ulcers was then not widely accepted, it is reasonable to label this good care, at least circa 1988. With the benefit of hindsight, we know more today; nonetheless, the patient's symptoms improved, and so by that yardstick, we'd have to say that Mr. S received high-value care.

Given the insufficient correlation between quality and outcome, some

A note from the Editor-in-Chief: We are pleased to present to readers of Clinical Orthopaedics and Related Research® the next Not the Last Word. The goal of this section is to explore timely and controversial issues that affect how orthopaedic surgery is taught, learned, and practiced. We welcome reader feedback on all of our columns and articles; please send your comments to eic@clinorthop.org.

The author certifies that neither he, nor any members of his immediate family, have any commercial associations (such as consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research®* editors and board members are on file with the publication and can be viewed on request.

The opinions expressed are those of the writer, and do not reflect the opinion or policy of *Clinical Orthopaedics and Related Research®* or The Association of Bone and Joint Surgeons®.

Joseph Bernstein MD (✉), University of Pennsylvania, 424 Stemmler Hall, Philadelphia, PA 19104, USA, Email: orthodoc@uphs.upenn.edu

J. Bernstein, Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, USA

Not the Last Word

analysts turn to so-called process variables to define quality. In the realm of assessing the quality of arthroplasty care, for example, evaluating whether deep vein thrombosis (DVT) prophylaxis was used is a process variable (as opposed to determining the proportion of patients who actually experienced a clot after surgery, which would be an outcome variable). The use of process variables is common. In fact, a systematic review [1] of quality measures in arthroplasty found that 21 of 35 (60%) metrics reported were process variables.

The use of process variables might make it easier to assess performance but checking all of the right boxes is not equivalent to delivering high value care. In the case of arthroplasty, giving DVT prophylaxis is less important than actually avoiding a DVT. And preventing DVT pales in significance next to achieving the minimum clinically important difference in pain relief and functional improvement [9]—the critical outcome measures, whose frequent absence renders any scale without them imprecise at best.

The employment of imprecise labels to identify high-quality care would not be society's problem if these labels were limited to only internal use by professional organizations. Private organizations' standards don't have to foist obligations on the public. The American Kennel Club [3], for instance, can declare that a Bernese Mountain Dog ideally weighs no more than 115 pounds, but that does not stop me from loving our mountain of pet, Büster, all 141 pounds of him. In practice, however, imprecise high-value health care standards do impose obligations on society because these standards are linked to higher payments [13], and higher payments can be funded only with higher charges or higher taxes.

Reform is needed.

The most basic reform would be to limit bonuses to only the top group of physicians (defined by any ordering scheme the profession prefers). In a world where providers are free to define what is valuable, they will likely suggest a standard of excellence that rates every one of them as special and deserving of extra compensation—the so-called “Lake Wobegon Effect” [6]. (This effect is named after the fictional town created by the storyteller Garrison Keillor. According to Keillor, in the town of Lake Wobegon, all the women are strong, all the men are good-looking, and all the children are above average.)

Designating all children—or all doctors—as above average is not only comical and logically impossible, it contradicts the definition of excellence. The word “excellence” has a Latin root meaning “surpass” and only those physicians whose performance surpasses the competition deserve its label. We should pay bonuses to only the elite.

A related useful reform would be to couple extra payments for excellence with paying less for mediocre medical care. This makes the system budget-neutral. Withholding part of the physicians' fees offer other benefits as well: incentives work better when framed as avoiding a loss, and those who are implicitly fined will be especially motivated to detect flaws with the rating system.

And then there is the easiest—and I'd say most helpful—reform approach: Allowing providers to charge lower prices and to compete on that basis (similar to the deregulation of the airlines 40 years ago [16]). Given that value is defined as healthcare outcomes per dollar spent [5], a healthcare provider can offer more value by simply agreeing to accept less pay while providing care of ordinary quality. If high-

value health care were to be defined as ordinary health care but with lower charges, we may finally see the price competition society so desperately needs.

Robert H. Quinn MD, FAAOS, FAOA
Chair, American Academy of Orthopaedic Surgeons (AAOS) Council on Research and Quality
Chair and Professor, Department of Orthopaedics, University of Texas Health Science Center at San Antonio

Dr. Bernstein chooses an interesting historical example to raise some excellent questions about value-based health care. Bloodletting may well represent one of the oldest and most-common forms of medical practice [17], and also one that persisted for hundreds of years after the introduction of fairly sound scientific evidence challenging its use. The stubborn persistence of an archaic procedure long after the introduction of sound science refuting its merits (and in the complete absence of supporting evidence other than anecdotal observation) should perhaps not surprise us given the continued insistent support for much of what we do in the practice of surgery.

High-value health care can only exist when we recognize, and reward, the outcome and not the effort. The outcome in question must be the one the patient seeks, and the treatment proposed must be different enough from the alternatives that she will notice the difference. The treatment of choice should demonstrate clear superiority of alternatives, at least by a minimal clinically important difference as opposed to simple statistical significance [12]. Prior to Omeprazole, gastric ulcer surgery likely was a high-value treatment. However, if the two were compared in a comparative

Not the Last Word

effectiveness analysis today, Omeprazole would be the clear winner on value. Not only are the actual financial costs much lower, but the risk/benefit ratio clearly favors the drug over surgery.

I am in strong agreement with Dr. Bernstein that we should not use process variables as measures of success. But neither should we use the current patient satisfaction surveys, which assess the patient experience rather than medical outcomes. Both are poor surrogates for what we really care about—patient outcomes. Unfortunately, despite decades of effort, we still have relatively poor measures of patient outcomes and, therefore, the system has chosen to go after the “low hanging fruit” as represented by both process measures and patient satisfaction surveys. The more rapidly we can continue to develop and create validated patient-reported outcome measures (PROMs), the more quickly we can replace such surrogate measures. Certainly, the evolution of the AAOS family of registries [2] will go a long way in this regard.

Imprecise high-value healthcare standards certainly do impose obligations on society, including physicians and patients. Simply because they are imprecise means the cost to society, and therefore, the tax and other financial burdens will almost always be higher. However, in a true value-based environment, most overall costs will decrease. It is certainly true that some high-value treatments will cost more than they currently do, but only those that will still offer a higher value by being offset by other costs (less complications, greater economic impact by keeping patients active and gainfully employed).

Dr. Bernstein provides three examples of reform mechanisms: Bonuses, fines, and market competition. The

current Merit-based Incentive Payment System (MIPS) program, administered by Centers for Medicare & Medicaid Services [4], includes both bonuses and fines in an effort to keep the program budget-neutral. Many of the measures evaluated through MIPS will simply be more process measures and reports of the patient experience. Although this is a first-step effort in the right direction, nobody should confuse these efforts with true value-based health care. It is still largely a continuation of the current zero-sum game of cost-shifting where winners and losers are picked by largely arbitrary and capricious criteria rather than true patient outcomes.

True value-based care will arrive when we achieve simple market competition. This will require substantial regulatory relief to provide a level playing field where innovation, experience, and excellence can provide the greatest value to the patient in the form of superior cost-effective outcomes. Although the system, in my view, appears to be moving incrementally in the right direction, it will take a long time at the current pace to overcome the inertia of powerful payers, hospital systems, and government bureaucracy, all of which benefit from the current system at the expense of the patient and the providers who care for them. Evolution takes time and occurs incrementally. Revolution in the healthcare industry would have to occur from the outside, not from within the current system. If revolution is to occur, it likely will be led by current large employers who have become so because of their ability to innovate nimbly on a large scale. At some point, perhaps, they will recognize what a drag the current system is, not only on their bottom-line costs, but on the health and well-being of their most important asset—their employees.

I hope that Dr. Bernstein is not missing the point of market competition and value-based care. He suggests that reform can be achieved by allowing providers to charge lower prices and to compete on that basis, or that a healthcare provider can offer more value by simply agreeing to accept less pay while providing care of ordinary quality. This is simply a continuation of the perverted discounted fee for service environment in which we currently exist, one that has created no inherent value for any stakeholder. In a true market-based value environment, providers compete on their ability to offer the best outcome for the patient at the most competitive price. Although overall healthcare costs will certainly decrease dramatically in such an environment, most of the cost savings will occur through elimination of waste and low-value, non-evidence-based treatments. If overall costs are substantially lower, any patient (or payer) will happily pay more to the provider who can deliver better value than his or her competition.

Antonia F. Chen MD, MBA
Associate Professor, Harvard Medical School
Director of Research for the Division of Adult Reconstruction and Total Joint Arthroplasty, Brigham and Women's Hospital

“See one, do one, teach one.” That was the mantra that we followed when learning how to do procedures. We know that many practices in orthopaedics are performed because we learned them from our mentors, and in turn, they learned them from their predecessors. As astutely pointed out by Dr. Bernstein, these practices were not necessarily wrong in their time. However, these practices have now fallen out of favor. How do we avoid the same fate as Drs. Craik and Brown, and more importantly, how can we

Not the Last Word

keep more patients from having an outcome like that of George Washington?

The answer is to implement evidence-based medicine. Clinical theories, such as the treatment of epiglottitis with bloodletting, have been subsequently debunked with evidence as they were shown to be low-value services given other treatment options. Value is quality divided by cost, with a consideration for the patient experience. High-quality practices are defined by following evidence-based guidelines.

Implementing these evidence-based quality metrics should be measured, published, and rewarded. Process variables are not perfect, and while making meaningful changes such as reducing readmission rates are of greater clinical interest, these process variables are still important in our healthcare system, as we need metrics to determine if progress has been made. Making evidence-based changes by financially incentivizing physicians to implement these standards of clinical performance are what have driven bundles in total joint arthroplasty reimbursement.

Incentivizing clinicians to follow relevant process measures based on solid clinical evidence measures is not a new concept. In the United Kingdom, hospitals that adhere to six evidence-based process variables when treating hip fracture patients who are greater than 60 years old get incentive pay, or a best-practice tariff [14]. These six parameters include time to surgery < 36 hours, admission under the care of orthopaedics and geriatrics, admission using an assessment protocol, geriatric assessment within 72 hours of admission, implementation of a postoperative multi-professional rehabilitation team, and performing fracture prevention assessments. This encourages the system to work together and improve patient care, rather

than simply incentivizing individual physicians. It also helps to reduce variation in care and reward system processes, not just individuals who treat healthier patients who can provide better outcomes.

Individual physicians can drive the healthcare market, so while market competition worked for the airline industry, the problem in healthcare is that patient perception of value and quality shapes our industry. This perception of physician experience and expertise are often based on online rating systems, and studies have demonstrated that physician ratings may not correlate with patient outcomes [7]. A physician may be perceived as “more valuable” if (s)he charges more than another physician. However, by deregulating the healthcare industry and making it a truly free market, we could create a much bigger problem similar to the problems we saw when stem cells entered the market [11], which resulted in market claims that were not backed up by scientific evidence, business volume being driven by advertisements instead of outcomes, and lack of standards for the products being marketed. Using evidence to drive our healthcare system will raise the value of our health care to patients, instead of devaluing the healthcare system with deregulation.

References

1. Amanatullah DF, McQuillan T, Kamal RN. Quality measures in total hip and total knee arthroplasty. *J Am Acad Orthop Surg*. 2019;27:219-226.
2. American Association of Orthopaedic Surgeons. The AAOS registry program. Available at: <https://www.aaos.org/registries/>. Accessed August 7, 2019.
3. American Kennel Club. Bernese mountain dog. Available at: <https://www.akc.org/dog-breeds/bernese-mountain-dog/>. Accessed July 11, 2019.
4. American Medical Association. Understanding Medicare’s merit-based incentive payment system (MIPS). Available at: <https://www.ama-assn.org/practice-management/payment-delivery-models/understanding-medicare-s-merit-based-incentive-payment>. Accessed August 7, 2019.
5. Bernstein DN, Nwachukwu UB, Bozic KJ. Value-based health care: moving beyond “minimum clinically important difference” to a tiered system of evaluating successful clinical outcomes. *Clin Orthop Relat Res*. 2019;477:945-947.
6. Berwick DM. Measuring physicians’ quality and performance: Adrift on Lake Wobegon. *JAMA*. 2009;302:2485-2486.
7. Donnelly CJ 3rd, Li DJ, Maguire JA Jr, Roth ES, Barker GP, McCormick JR, Rush AJ 3rd, Lebowitz NH. How social media, training, and demographics influence online reviews across three leading review websites for spine surgeons. *Spine J*. 2018;18:2081-2090.
8. George Washington’s Mount Vernon. The death of George Washington. Available at: <https://www.mountvernon.org/library/digitalhistory/digital-encyclopedia/article/the-death-of-george-washington>. Accessed July 11, 2019.
9. Ghomrawi HMK, Mancuso CA, Dunning A, Gonzalez Della Valle A, Alexiades M, Cornell C, Sculco T, Bostrom M, Mayman D, Marx RG, Westrich G, O’Dell M, Mushlin AI. Do surgeon expectations predict clinically important improvements in WOMAC scores after THA and TKA? *Clin Orthop Relat Res*. 2017;475:2150-2158.
10. Hadler NM. *Worried Sick: A Prescription For Health In An Overtreated America*. Chapel Hill, NC: University of North Carolina Press, 2012.
11. Knoepfler PS. From bench to FDA to bedside: US regulatory trends for new stem cell therapies. *Adv Drug Deliv Rev*. 2015;82-83:192-196.
12. Leopold SS, Porcher R. Editorial: Threshold p values in orthopaedic research-We know the problem. What is the solution? *Clin Orthop Relat Res*. 2018;476:1689-1691.
13. Medicare.gov. Linking quality to payment. Available at: <https://www.medicare.gov/hospitalcompare/linking-quality-to-payment.html>. Accessed July 11, 2019.
14. Metcalfe D, Zogg CK, Judge A, Perry DC, Gabbe B, Willett K, Costa ML. Pay for performance and hip fracture outcomes: An interrupted time series and

Not the Last Word

- difference-in-differences analysis in England and Scotland. *Bone Joint J.* 2019;101B:1015-1023.
15. Patterson K. What doctors don't know (almost everything). Available at: <https://www.nytimes.com/2002/05/05/magazine/what-doctors-don-t-know-almost-everything.html>. Accessed July 11, 2019.
 16. Rose NL. After airline deregulation and Alfred E. Kahn. *Am Econ Rev.* 2012;102:376-380.
 17. Thomas DP. The demise of bloodletting. *JR Coll Physicians Edinb.* 2014;44:72-77.
 18. Wallenborn WM. George Washington's terminal illness: A modern medical analysis of the last illness and death of George Washington. Available at: <http://gwpapers.virginia.edu/resources/articles/illness/>. Accessed July 11, 2019.