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The Triple Standard in Healthcare

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Abstract

Medical and financial outcomes in health care derive from choices made by three decision-making components of the system: medicine, management, and regulation. Because they are judged by three different sets of rules, this is a triple standard. Medicine is expected to be evidence-based and to have effective feedback mechanisms. Management is becoming evidence-based but has little effective feedback. Regulation lacks both an obligation to evidence and effective feedback mechanisms. The triple standard is part of why healthcare outcomes consistently disappoint. The solution is to create one set of standards for all decision-makers within healthcare. Implementation of the Figure-of-Eight Learning Loop can help.

KEYWORDS: healthcare, systems thinking, outcomes, learning, decision science

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Introduction

Judging two similar groups according to different sets of rules is called a double standard, *viz*., paying a woman less than a man for doing the exact same work.

Outcomes in healthcare are produced by three groups of people: providers, managers, and regulators as well as legislators. As these groups are held to three different standards of accountability and responsibility, healthcare labors under a *triple standard*.

It is obvious that outcomes in healthcare—both medical and financial—are critically dependent on choices made by a fourth group: patients. Patients are not considered in this article because they are the substrate upon which the healthcare system works rather than a component of that system. Their exclusion should not be construed as a statement of low value. Quite the opposite! Patients are the *raison d'etre* for the existence of healthcare. (See Figure 1.)

Healthcare as one word refers to what the system *is*. Health care as two words indicates what the system *does*. Nurses and doctors *provide* health care. Administrators *manage* health care services, and regulators/legislators *control* [the] healthcare [system].

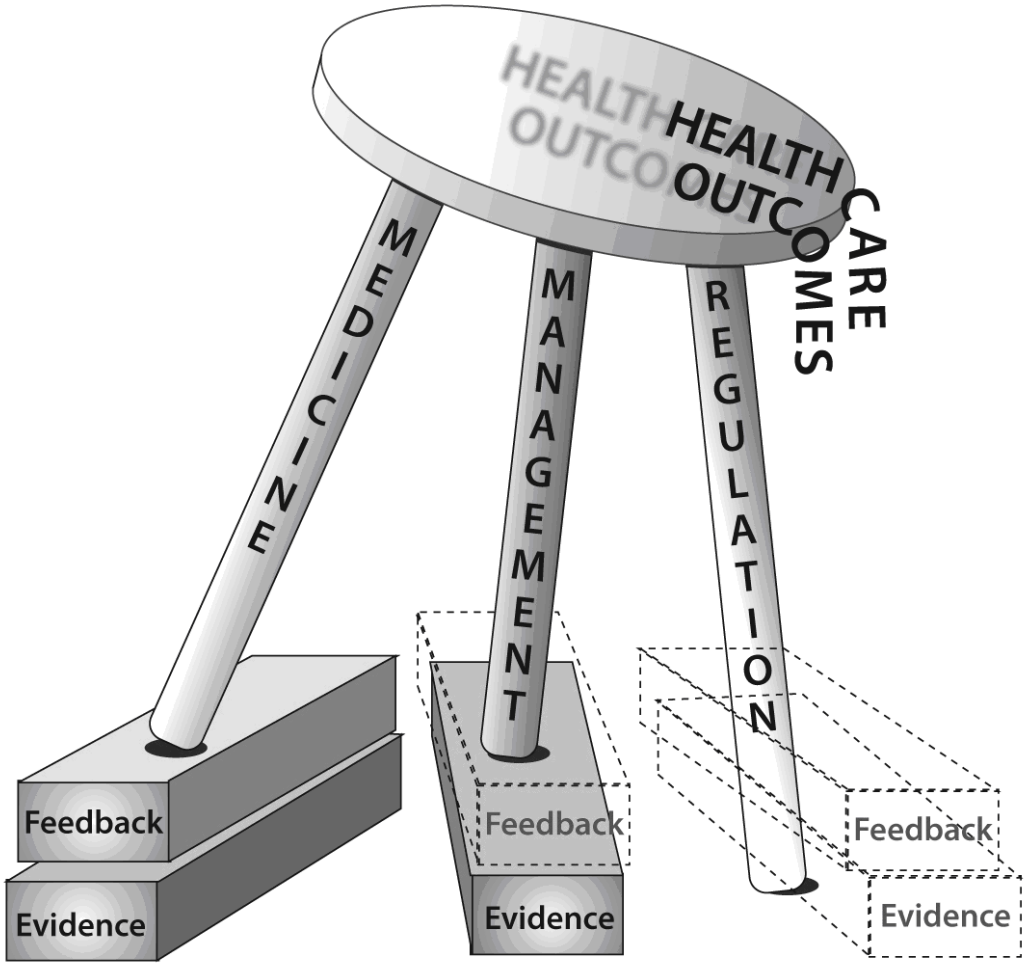
Recently publicized error rates in U.S. health care; the ever escalating cost spiral; increasing shortages, particularly in highly trained personnel; and adverse quality outcomes can be ascribed in large part to the triple standard: (1) a commitment to evidence versus reliance on logic alone in decision-making, (2) the presence or absence of effective feedback, and (3) the use of linear thinking versus systems thinking (Leape 1994; Edmunson 1996; Ferlie, Fitzgerald, and Wood 2000; McFadden, Towell, and Stock 2004).

Evidence

Evidence and Decision-making

Evidence—that which tends to prove or disprove something—is developed to help make a decision, which is then implemented seeking a predefined result. Prospective testing produces information in advance of action called *ad hoc* evidence. Information acquired after-the-fact is called *post hoc* evidence. Both can be ana-

Figure 1. The Unstable Three-Legged Stool



Legend for Figure 1

Healthcare as a system is unbalanced in large part because the three different parts—medicine, management, and regulation—function under three different sets of rules. In essence, healthcare has a triple, not just a double, standard. Medicine is expected to be evidence-based and to have effective feedback. Management is beginning to consider evidence-based decision-making but has little-to-no feedback. Regulation has neither evidence basis nor effective feedback. As a result, outcomes . . . slip away—they are not the desired ones.

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lyzed statistically to prove or disprove the null hypothesis and then interpreted in light of related, previously proven knowledge in order to optimize the outcomes resulting from our decisions.

In the broadest sense, there are two kinds of evidence: direct and indirect. Direct evidence measures the observed outcome. Indirect evidence is a substitute or surrogate for direct measurement of actual outcomes. The vast majority of measures in healthcare are surrogates.

Evidence in the Practice of Medicine

Over the past century and despite unique difficulties applying scientific methods to human illness (Waldman, Yourstone, and Smith 2003), practitioners of medicine have begun to implement an obligation to evidence-based decision-making (Cochrane 1972; McFadden, Towell, and Stock 2004).

Professional organizations are developing results-driven clinical guidelines (Mosca, Appel, and Expert Panel/Writing Group 2004). Computer-assisted diagnoses, Medline searches, and Internet access to medical information are increasingly in use. Best practices and benchmarking, once the exclusive property of marketers, have become common phrases in medical usage. Rigorous statistical methods, rather than personal bias, including risk-adjusted clinical scoring have been introduced into the determination of medical quality (Lacour-Gayet, Clarke, Jacobs, et al. 2004).

An extensive literature confirms the volume-to-[high quality]-outcome relationship in the practice of medicine, *viz*., in adult and pediatric surgery (Begg, Cramer, Hoskins, and Brennan 1998; Hannan, Racz, Kavey, Quaegebeur, and Williams 1998); coronary artery procedures (Ellis, Weintraub, Holmes, et al. 1997; McGrath, Wennberg, Malenka, et al. 1998); and neonatal mortality (Phibbs, Bronstein, Buxton, and Phibbs 1996). These citations are but a tiny sampling of the available body of evidence.

With the application of sophisticated research models and statistical tools, medical practitioners can now know (and therefore predict) what works in various subpopulations of patients. Physicians can say, for instance, that a certain drug works in 90% of cases with a specific condition, has no useful effect in 7%, and is harmful to 3%. Physicians still do not know whether a specific individual will be in the ninety, the seven, or the three who experience adverse outcomes.

Evidence in Healthcare Management

There is limited evidence within the management (Axelsson 1998). of healthcare: all *post hoc*, and typically communicated to *neither* the care decision-makers nor to those impacted—the patients. Managers are not held accountable nor

legally responsible for the medical consequences of their decisions. Managerial performance is typically tracked by financial, not patient-related, outcome measures. Managerial decisions in most businesses, including healthcare, rely on logic as their sole effort at due diligence. Managers may consider and analyze past experience, but then they reason their way to a solution. Thus, evidence would not be used even if produced.

Managerial culture is different from medical practitioner culture in how evidence is valued. In the medical world, it is widely acknowledged that decisions should be based on scientific evidence (Berwick, Godfrey, and Roessner 1990; Bryan-Brown and Dracup 2001; McIntyre and Popper 1989). For managers, this professional expectation is beginning to surface (Shortell, Zazzali, Burns, et al. 2001; Waldman and McCullough 2002), but the scope and depth of specific policies are poorly defined, and still rarely implemented with consistency or rigor (Ashmos and McDaniel 1996; Ashmos, Duchon, and McDaniel 2000; Kissick 1995; McDaniel and Driebe 2001).

Evidence in the Regulation of Healthcare

It is impossible to prove a negative but there is strong inferential and circumstantial evidence to indicate the absence of evidence in the regulation of healthcare. Certainly, in the sense of statistically robust, scientifically valid evidence of the existence of a problem; meta analysis evidence of the literature available; *ad hoc* evidence derived from testing outcomes of potential solutions; or *post hoc* evidence of solutions already tried, there is no evidence of such evidence. This is part of the reason why most regulations produce "fixes that fail" (Aronson 1996–98).

There is a large volume of one form of evidence in the regulatory arena: compliance or noncompliance with the regulations. The latter is considered *prima facie* evidence of low quality. Regulatory compliance is used as a surrogate for medical quality despite the lack of proof that they are correlated.

Problems with Evidence in Health Care

Surrogate measures are common in health care because of difficulties in acquiring accurate and appropriate direct data. These difficulties exist because of the nature of health care outcomes; the environment in which healthcare functions; and the ethics of experimentation.

Nature of Healthcare Evidence

A physicist can precisely measure the boiling point of alcohol. Where is the boiling point of a manic-depressive? A metallurgist can accurately define the tensile

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strength of a titanium tube. How do you measure the strength of a cancer patient undergoing chemotherapy? Health care outcomes are hard to quantify. Much more important, the desired effects are very widely separated in time from their true causes.

You can put steel, plastic, rubber, wires, and computer chips into an auto assembly plant and nine days later, you have the outcome you want: a car. When you repair a congenital heart problem in a baby, the desired outcome—a healthy adult—is seen 90 years later. The fact that the baby lived for 30 days after surgery is necessary and desirable but hardly sufficient as a measure of success.

Even when evidence is scientifically strong and confirms a better, safer even cheaper way to provide care, the learning can be suppressed if it is out of compliance with regulations (Gawande 2007).

Environments

Both medical culture and the external environment in which it functions constrain the production of evidence. Medical culture is authoritative and highly individualistic. It discourages the kind of collaborative teamwork that would facilitate innovation, evidence creation, and learning. Management culture does encourage collaboration but places little positive value on the scientific method and testing.

The external environment is actively hostile to the healthcare system. All adverse outcomes are assumed to be due to error. When adverse impacts occur, evidence is used for punishment and to try to "make the victim whole" (Prosser, Dobbs, Keeton, and Owen 1984). This makes healthcare highly risk-averse, which in turn discourages experimentation, the means by which *ad hoc* evidence is produced.

The Ethics of Health Care Evidence

To test the strength of a tube, you bend it till it breaks. Can you test to determine the breaking point of a patient? To find the strongest tubes, you can make different ones of various alloys and test them. Can you *make* patients with cystic fibrosis in order to test them? The assembly line at Toyota tightens lug nuts to a proper tension. The lug nut never says ouch! The majority of powerful tools and techniques developed by science to produce *ad hoc* evidence are unethical or impossible in health care.

Learning and Feedback

We learn the stove is hot by the sensation of heat being fed back to our brains from our fingertips. The planner of an action, for instance a physician, has informa-

tion fed back in order to make better decisions: *ad hoc* evidence from experiments or post hoc evidence from analysis of after-the-fact experience. Without evidence, there is nothing to feed back. Without feedback, there is no learning and without learning, there is no improvement (Waldman, Yourstone, and Smith 2007). Even when there is evidence, feedback may fail.

There are many reasons why feedback may fail. Desired outcomes can be ambiguous, contradictory, or not even defined. Communication can be ineffective. What works in a Petri dish or an animal often does not work in a human. There can be a huge time lag between cause and effect: either an intended or an unintended consequence may occur long after observation has stopped and conclusions have been reached. Evidence can be missing entirely; insufficient, as in too few patients; or inappropriate as surrogate or indirect evidence. Finally, a structured process for effective feedback may be lacking and learning will be per force constrained.

Systems Thinking

To comprehend how the triple standard obstructs the linkage between evidence and feedback, consider linear reasoning.

Linear thinking in health care would be the epitome of practicing bad medicine. A linear thinker would see swollen ankles and conclude: water retention. The problem is obviously the kidneys: give a diuretic, increase urine output, lose water, problem solved. (This is the exact same reasoning—linear—used when a state or the federal government announces across-the-board reductions in Medicare payments.)

The systems thinker starts with root cause analysis. The primary or root cause of pedal edema might be cardiac mediated by the kidney. Noting the potential causal loops, the systems thinker would consider the effect on preload of losing water as well as the potential arrhythmogenic effect of a change in serum K+. A systems thinker automatically practices good medicine.

Systems thinking or dynamics refers to a school of thought originated by Ludwick Bertalanffy (1975; Davidson 1983) and expanded by innovators such as Ackoff, Kauffman, and Sterman (Ackoff 1999; Kauffman 1995; Sterman 2002; Sterman 2006). Bertalanffy's primary premise was that every effect, every outcome we see or experience in life, is due to interactions of system parts rather than the actions of parts acting in isolation—in their separate, individual little silos. A consequence of his concept is the need to discard linear thinking in favor of causal loops.

Causal loops occur in all systems with humans, particularly in healthcare and health care. Clean, straight lines are logical, comforting, and do not exist. Feedback is a form of the return loop, and evidence is what should be fed back. When properly structured feedback is lacking, we get two systems thinking mantras: Yesterday's

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solutions are today's problems, and its corollary: Today's solutions are tomorrow's problems.

The triple standard is a manifestation of the lack of evidence or feedback—in essence, the absence of systems thinking in healthcare. The triple standard is healthcare's broken or incomplete causal loop.

Conceptual Model

The Figure-of-Eight loop (see Figure 2) is an application of systems thinking to achieve continuous improvement. It links evidence with feedback and enhances learning. A question or problem generates an idea, which is tested and produces *ad hoc* evidence. Those who "Do"—providers, managers, and regulators—learn from this evidence and apply the revised, new idea to the patients.

Decisions are made and implemented, producing *post hoc* data. This evidence is fed back to the "doers"—care-givers, administrators, and regulators—which generates a revised or new question and the process starts all over again. The Figure-of-Eight is self-correcting. It keeps looping until we achieve perfect, predictable results, which in healthcare means it is never-ending.

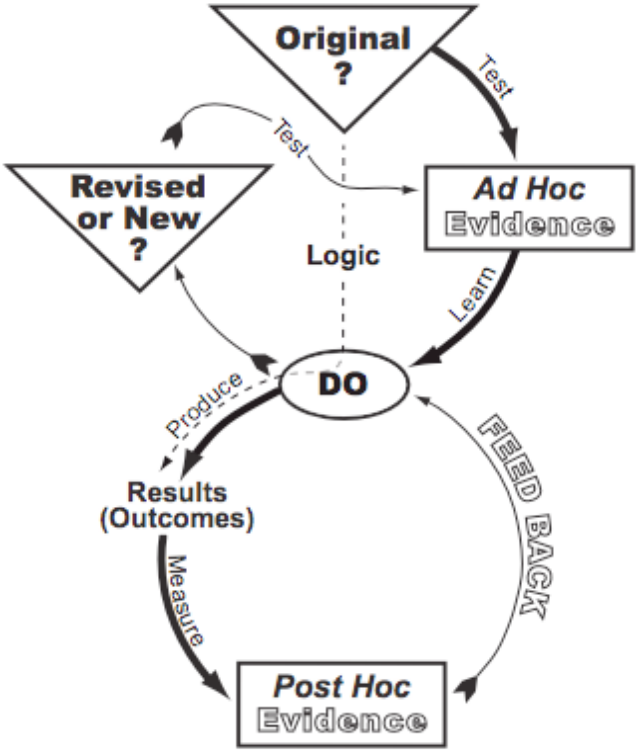
". . . One for All"

The USA was founded on the rule of law, applied uniformly and equally. The law re embezzlement is the same no matter who you are: Charles Ponzi, Jeffrey Skilling (Enron), Bernie Madoff, or Jane Doe. The triple standard is a differential that should be reduced to a single standard ("One for All")—evidence-based decision-making and embedded effective feedback—applied to all components of healthcare, equally.

The initial and most important challenge change will be changing how we think. We need to update our mental models from the machine systems of the 19th century to the thinking systems (Waldman 2007) of the 21st. Accepting the interdependency of all components of the healthcare system mandates the use of systems thinking (McDaniel 1997). Ambiguity and complexity are inherent in our modern world. There are many effective approaches to dealing with complexity but managers must first learn to embrace complexity rather than ignore or seek to reduce it (Ashmos, Duchon, and McDaniel 2000; McDaniel and Driebe 2001; Sterman 2006).

Russell Ackoff has repeatedly emphasized that, "*managers and implementers were part of the problem, not external to it*" (italics per author) (Ackoff 1999). Disconnection between management and those managed as well as disconnection between those who regulate and those who implement—both managers and providers—is particularly problematic in healthcare. We need to reconnect the three components of the healthcare system. A commitment to One for All will do that.

Figure 2. The Figure-of-Eight Learning Loop



Legend for Figure 2

A linear approach to decision-making and problem solving (dashed lines) moves from original question to action (DO) via logic. The action produces results and the line ends—the process stops.

The Figure-of-Eight Learning Loop: solid lines describe how a feedback loop should work when production of evidence and effective feedback are part of the process. A question is posed, such as why did that happen to this patient? A hypothesis is generated, tests are performed, and data are analyzed generating *ad hoc* evidence. The result of evidence-production is learning that improves doing and its results. Actions taken produce results or outcomes, which can never be perfect. Study of the outcomes in comparison to what was desired yields *post hoc* evidence. This *post hoc* evidence is communicated (feedback) to the person who acted. This individual revises the original question or poses a new one, starting the whole cycle again. Without *ad hoc* evidence, unintended consequences will be the norm. Without *post hoc* evidence, one cannot compare expected results to actual outcomes. Without feedback, i.e., when *post hoc* evidence is not communicated back, the system cannot improve outcomes and will simply reiterate the process as initially devised, preserving the status quo.

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In order to have a "one [standard] for all," the cultures of medical, management, and regulation, at least as pertains to healthcare, must change. All are presently rule-bound, risk-averse, and committed to the status quo. They need to invest their cultures with a passionate commitment to learning (Spear 2005), become risk-avid, embracing new ideas and change. It is likely to astonish doctors and managers that they share core values (Waldman, Hood, and Smith 2006). That commonality could be used as a bridge across the "gap" (Waldman and Cohn 2007) to facilitate communication, achieve synergy and promote the "one for all."

Cultural conversion, while necessary, will be very difficult and take years-to-decades. Fortunately, there are many useful changes that are simple and straightforward, such as system checks and a national medical database. Most modern cars signal the driver if a seatbelt is not engaged. Shouldn't a doctor start procedures with a checklist, just like an airplane pilot? Shouldn't the patient's allergies be input into the central database so that medications to which he or she is allergic cannot be given? Even more basic, shouldn't there be a database that precludes giving incompatible drugs or medications in overdose (Walker, Pan, Douglas, et al. 2005)?

The providers of healthcare, who have the necessary expertise and experience, must design a system in collaboration with the managers that learns and at the same time protects patients and providers alike. Regulators should facilitate, not impede this development.

The Figure-of-Eight learning loop (Figure 2) is an effective evidence-producing system with embedded feedback. Once started, it functions like a Möbius strip: it has no end. Applied equally to medicine, management and regulation, the Figure-of-Eight would eliminate the triple standard and implement a One for All.

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