A PIECE OF MY MIND

For What It's Worth

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About a year ago, I died. Just for a few minutes, but long enough that I had a round of chest compressions so deep my sternum ached for weeks. At times my ribs hurt more than the long incision running down my belly, made in haste to control the bleeding that was taking my life.

After my daughter was born, following a healthy pregnancy and normal term vaginal delivery, I developed acute disseminated intravascular coagulation with massive hemorrhage, multiorgan failure, and cardiac arrest. One round of cardiopulmonary resuscitation, three surgical teams, and 60 units of blood later, I was recovering on a ventilator in the ICU. When I awoke, I learned what an amniotic fluid embolus was, and that I had survived one. It was a good save, especially for the first week in July.

I am a pediatric intensivist, so I know some things about CPR. What I don't know (and may never really understand) is what interventions like this are worth or, perhaps more quantifiably, what they cost. CPR, the physical compression of one human's heart with another human's hands to restore life, doesn't really cost anything. But what is it worth? "Everything" sounds absurdly too small.

When the bills for my hospitalization began arriving in the mail, my husband and I had no idea what to expect. It became an entertaining guessing game when one bill (for several thousand dollars) was itemized simply in two categories: "Laboratory" and "Miscellaneous Facility." When the main statement came, primly trifolded on a single sheet of paper, we gasped at the total: just short of $250 000. About half the charges were attributed to "Blood Bank" and the other half vaguely categorized in the same vein as "Miscellaneous Facility." We gasped not because of the amount, or because it seemed ridiculous to itemize a bill like that on one page, but because we couldn't believe the bargain we got! They saved my life. They saved my husband's partner. They saved my daughter's mother on the day she was born. What is that worth? A quarter of a million dollars doesn't touch it.

Five days after the arrest, I walked out of the hospital with my family. I have spent a lot of time since that day thinking about the perfect coalescence of forces that secured such an outcome. I delivered at an urban trauma center, one of the busiest obstetric hospitals in the country, where resources are rich and health professionals are skilled. What if there were no trauma surgeons? What if there wasn't enough banked blood, or it didn't come fast enough?

At first (partly biased by the bill) I attributed the greatest share of credit for my survival to the blood bank. When blood pressure is falling and heart rate is rising, when myocardial oxygen demand exceeds supply, when erythrocytes have been diluted by crystalloid or consumed by inflammation gone awry (or simply spilled on the floor), all you need is blood. But as I thought more about that day, from the details I remembered to the imagined moments extrapolated from professional experience, I concluded the more proximate guarantor of my intact survival was simply good, immediate CPR. Oxygen-laden hemoglobin doesn't help if it isn't circulating.

The act of performing CPR (or supervising its performance, both encompassed by *Current Procedural Terminology* [*CPT*] code 92950) earns about $200.[1] This might have seemed fair to me had I considered it after I first performed it, as a medical student. My sore arms reminded me it wasn't for lack of effort that the aged man with a scarred, ischemic heart died under our hands. For me it was a physical effort, a brutish and primitive effort, tasked to the apprentice with little else to offer. Had I once considered it back then, $200 for my services might have seemed reasonable, generous even.

Years later I learned the nuances of performing this fundamental skill. Push harder! Push faster! Allow full recoil! During my fellowship, I saw outcomes at both extremes as I learned how to perform CPR like an intensivist. A 4-year-old boy sang the theme song to his favorite cartoon just three weeks after a 100-minute arrest. A healthy infant died in the trauma bay after he was found motionless in bed, and even perfect CPR could not have revived him. His little heart had been still too long and would not be coaxed back to beating.

CPT 92950 bills the same for all of these—for an elderly man dying under a medical student's hands, for a child heroically resuscitated who might now thrive for decades, for a baby whose life we tried to save but couldn't … and for me. On the bottom line, it's all the same. 92950 pays around 200 bucks, give or take.

Medicine more than any service in our culture lacks meaningful connection between cost and worth. Even the word "cost" doesn't mean what it might in another industry. Cost to whom? The hospital? The insurer? The patient? "Worth" is even harder to define, because how can one assign a value to health, to human life? This defense has justified skyrocketing pharmaceutical costs, especially noteworthy in cancer chemotherapeutics and, more recently, the breakthrough antiviral therapies for hepatitis C.[2] No price seems too high for the promise of hope, of cure, of life long-standing. But if you don't get what you bargained for— if the drug doesn't work, or your loved one dies anyway, after hours on the operating table and heroic efforts in the ICU and all the technology our profession has to offer— that quarter of a million dollar bill still has to be paid, by somebody.

As we try to do more with less, as we aim to control the wildly disproportionate fraction of our gross domestic product spent on health care while our population ages and we extend health insurance (as we should) to

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everybody, physicians will be called upon to consider cost in the calculus of care.[3] To do this, we must know what our tests and interventions cost in the first place. We must then balance these costs against potential benefits, which we can surmise but never know with certainty for an individual patient. We repeat this murky exercise multiple times every day, without any feedback about whether these cost-conscious decisions are helping or hurting patients over time. Taken together, it seems impossible.

As I thought about my experience, about the fact that CPR accounted for less than 1/1000th of my total bill, a simple truth occurred to me: The most impactful things we do are cheap. If we remember this, and always practice with it in mind, it might serve the same purpose as any more complex calculus.

"Listen to your patients. They will tell you what's wrong." I heard this often during medical school, advised that a thorough history and review of systems will diagnose most problems. Recently a colleague recounted a clinic visit from a grateful patient whose life was renewed by this basic communication. The patient was a middle-aged cancer survivor with peripheral neuropathy and sleep apnea, who presented to clinic a few weeks prior with increased fatigue. She was taking a new medication for neuropathic pain and asked if this could be the problem, though she feared cancer relapse was the cause. Rather than change medications abruptly, introducing new costs and new side effects, or begin an expensive workup for new malignancy, my colleague simply asked his patient a few more questions, among them, "How's your CPAP going?" He learned of a new hissing sound coming from her machine at night, but she didn't think it bothersome. He recommended having the machine serviced, then to return in a few weeks. At this follow-up visit she was effervescent with gratitude, energy abounding, her life back to normal. She felt rested again, her fears of relapse erased, all for the price of a CPAP tune-up.

"Lay on your hands." I heard this often during residency, directed to value a good physical examination. You may hear the story a dozen times, passed across shifts or between services, but until you examine the patient yourself, the truth will not be clear. Auscultate. Palpate. Percuss. The answers are under your hands. In my specialty especially, however complex ICU care can be, the physical examination is paramount. As we search for the best biomarkers, as genomics and proteomics expand how we think about inflammation and infection, the diagnostic criteria for the systemic inflammatory response syndrome are still predominantly defined by physical examination findings— tachypnea, tachycardia, fever. We don't rely on expensive tests to tell us when we have reversed shock in our smallest patients. Instead, we feel their pulse and touch their tiny toes. Capillary refill time costs nothing to test, but it means everything.

With *ICD-10* looming and cost containment ever more critical, our mental bandwidth is increasingly monopolized by numbers. For many of us, this number crunch results in reduced clarity and impaired cognitive performance.[4] The very act of thinking about math makes us bad at it, limiting our problem-solving ability at the time we need it most. The ICU environment makes this worse, with excess data gumming our brainpower, sometimes hurting us rather than helping. In the unit where I work, every intubated patient has capnography and pulse oximetry displayed continuously on bedside monitors. This has not translated into fewer blood gas samples, which consume laboratory resources, provider effort, and precious patient blood. Over many days, especially for the smallest babies, this can cause iatrogenic blood loss necessitating transfusion, adding blood bank costs and risk of harm. All the while, the noninvasive monitors dutifully reflect their waveforms, waiting in the background to be heeded. Less truly is more, if only we would allow it.

As these numbers threaten to undo us, as we struggle to achieve better care for more people for less money, as we wonder every day how we will do it, remember this: Use the most elemental tools first, use them well, and believe in their yield. Talk and listen, lay on your hands, and don't think too hard about basic problems. If a solution is simple and makes sense, it's probably a good idea, and it's probably cheap.

92950 saved my life. At 200 bucks a pop, CPR is a steal. It's the most human intervention we do, a mechanical connection from hands to heart to blood to brain, powerful in its delivery and its effect, and it's essentially free. And when our hands cannot (or should not) restore life by force, they hold the power to comfort and soothe at the hours of death. Let us not forget these fundamental resources of our profession—the power of our hands, our voices, and our rational thought—for these are free but priceless, so if value is the ratio of cost to worth, theirs is infinite.

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1. https://ocm.ama-assn.org/OCM/CPTRelativeValueSearch.do?submitbutton=accept. Accessed June 1, 2014.

2. Callaway E. Hepatitis C drugs not reaching poor. *Nature*. 2014;508(7496):295-296.

3. Kuehn BM. Guidelines, online training aim to teach physicians to weigh costs of care, become better stewards of medical resources [Medical News & Perspectives]. *JAMA*. 2014;311(23):2368-2370. doi:10.1001/jama.2014.5756.

4. Ashcraft MH, Kirk EP. The relationships among working memory, math anxiety, and performance. *J Exp Psychol Gen*. 2001;130(2):224-237.