Samuel Clemens’s shifting attitude toward patent medicines

K. Patrick Ober, MD
The author (ΛΩΑ, Wake Forest University, 1995) is professor of Internal Medicine (Endocrinology and Metabolism) and associate dean for Education at the Wake Forest University School of Medicine. He is the councilor of the ΛΩΑ chapter at Wake Forest and the author of Mark Twain and Medicine: “Any Mummery Will Cure” (see the Winter 2005 issue, p. 48). This paper was adapted from a presentation given on August 5, 2005, at Elmira 2005: The Fifth International Conference on the State of Mark Twain Studies at the Center for Mark Twain Studies of Elmira College in Elmira, New York. Except as noted, all illustrations are courtesy of the author.

Scholars traditionally divide the life of Samuel Clemens (Mark Twain) into phases: a generally happy (though not entirely carefree) youth and a dark and despondent
old age. Some suggest, however, that this is a gross oversimplification, and that the negative outlook of Clemens’s later years was more of a reaction to the pain of specific personal setbacks than an indication of a generalized rage against the universe. To sort this out, it is instructive to look at Clemens’s attitude toward the patent medicine industry. Clemens was exposed to these nostrums from childhood through old age. He found hypocrisy and sham in the patent medicine industry, and wrote about patent medicine fairly regularly throughout his lifetime. Did he become increasingly cynical toward the patent medicine industry over time, as might be expected if the gloom and rage of his later years was indiscriminate, or did his chronic dismay with patent medicines remain unchanged even as personal setbacks increased his overall level of personal distress?

Perry Davis’s Pain-Killer—a cholera preventive?

Clemens’s first experiences with patent medicine can be traced to his childhood when his mother forced him to ingest Perry Davis’s famous Pain-Killer. Shoemaker Perry Davis invented Pain-Killer in 1840 to self-treat a severe respiratory infection with persistent cough, poor appetite, and “piles of the worst kind.” Alcohol was the remedy’s major constituent, and the additional ingredients of camphor for aroma and cayenne pepper for “zing” made it unforgettable to its users. Davis moved from Massachusetts to Providence, Rhode Island, to start a business to manufacture and distribute Pain-Killer, which was marketed for external use for cuts and abrasions, and for internal use as a cure for cholera. Its fame as a cure-all spread quickly. Davis’s widespread advertisements for Pain-Killer appeared in Hannibal, Missouri, newspapers of 1849. Clemens’s mother, Jane, who was always eager to employ the newest and the best in self-applied medical therapeutics, made the decision to use it as a cholera preventive for fourteen-year-old Sam and his siblings when the cholera epidemic of 1849 spread up the Mississippi valley toward their home in Hannibal. Samuel Clemens never forgot his Pain-Killer experience.

Pain-Killer was certainly on Clemens’s mind 14 years later in 1863, when he was a twenty-eight-year-old newspaper reporter in Nevada territory. Ads for Pain-Killer appeared in Virginia City newspapers of 1863, and these may have triggered his memory of the cure-all. He may have also been reminded of the name Perry Davis due to its similarity to that of Virginia City’s marshal, Jack Perry. Clemens, working for the Virginia City Territorial Enterprise, first wrote about Pain-Killer in a burlesque biography in which he lampooned Perry by substituting the name of the marshal in place of Pain-Killer inventor Perry Davis.

After the war was ended, Mr. Perry removed to Providence, Rhode Island, where he produced a complete revolution in medical science by inventing the celebrated “Pain Killer” which bears his name. He manufactured this liniment by the ship-load, and spread it far and wide over the suffering world; not a bottle left his establishment without his beneficent portrait upon the label, whereby, in time, his features became as well known unto burned and mutilated children as Jack the Giant Killer’s. Thus, Clemens’s perspective on patent medicine in 1865 was humorous, though with a touch of biting cynicism through his tongue-in-cheek suggestion that pouring alcohol and hot pepper onto the flesh of “burned and mutilated children” might be considered an act of beneficence.

Following the Pain-Killer thread throughout Clemens’s lifetime, we conclude that he was very consistent in his attitude toward patent medicine. Clemens’s earliest memories of Pain-Killer were not particularly fond ones, but his recollection of its fiery nature was useful for providing some slapstick imagery in The Adventures
of *Tom Sawyer*, published in 1876 (twenty-seven years after his first exposure to the patent medicine, and thirteen years after he wrote about it for the *Territorial Enterprise*):

[Aunt Polly] heard of Pain-Killer for the first time. She ordered a lot at once. She tasted it and was filled with gratitude. It was simply fire in a liquid form ... She gave Tom a tea-spoonful ... The boy could not have shown a wilder, heartier interest, if she had built a fire under him.2p10

A detestable medicine—made of hell fire

And in a portion of his *Autobiography*, dictated in 1906, fifty-seven years after his first encounter with Pain-Killer, Clemens remembered it the same way he always had:

It was a most detestable medicine, Perry Davis’s Pain-Killer. Mr. Pavey’s negro man, who was a person of good judgment and considerable curiosity, wanted to sample it, and I let him. It was his opinion that it was made of hell-fire.3p63

Two years after that, in a 1908 interview with a reporter for the *New York Times*, a seventy-three-year-old Clemens still recalled the Pain-Killer experiences of his youth in the same way (although he misremembered the name of the medicine, and substituted the name “Patterson” for “Perry Davis”):

There was a good deal of cholera around the Mississippi Valley in those days, and my mother used to dose up children with a medicine called Patterson’s Patent Pain Killer. She had an idea that the cholera was worse than the medicine, but then she had never taken the stuff. It went down our insides like liquid fire and fairly doubled us up. I suppose we took fifty bottles of that pain killer in our family. I used to feed mine to a crack in the floor of our room when no one was looking.

One day when I was doing this our cat, whose name was Peter, came into the room, and I looked at him and wondered if he might not like some of that pain killer ... He did not seem to get the real effect of it at first, but pretty soon I saw him turn and look at me with a queer expression in his eyes, and the next minute he jumped to the window and went through it like a cyclone, taking all the flower pots with him.4

This 1908 memory of Pain-Killer seems to be as mirthful as any of Clemens’s earlier recollections of the *Tom Sawyer* days of his youth, so maybe the twinkle-eyed humor really was there until the end, and the “tragic old age” spin has been overdone. Or had the Pain-Killer memory ceased being a valid litmus test for his state of mind, having become frozen in time with the other long-preserved memories of his Hannibal childhood?

It may be worthwhile to move past Pain-Killer and to consider his attitudes toward other patent medicines.

Stimulate the bowels—cure for anything

In 1863, the same year he wrote about Perry Davis’s Pain-Killer for the *Territorial Enterprise*, twenty-eight-year-old Samuel Clemens discovered another patent medicine, Wake-up Jake. While Pain-Killer was destined to be helpful in Clemens’s writing future for its imagery of ferocious heat, Wake-up Jake created opportunities for a young Sam Clemens to introduce a scatological bent to his references to patent medicine. The presumed therapeutic action of Wake-up Jake was based on the same principle that drove much of the medical practice of the nineteenth century, the belief that stimulation of vomiting and diarrhea would rid the body of its pathogenic toxins. As a young reporter in Nevada, Clemens visited the Steamboat Springs Hotel to recuperate from a prolonged respiratory illness. He reported his medical experience in a letter to the Virginia City *Territorial Enterprise*.
I called upon Dr. Ellis with the air of a man who would create the impression that he is not so much of an ass as he looks, and demanded a "Wake-up-Jake" as unostentatiously as if that species of refreshment were not at all new to me. The Doctor hesitated a moment, and then fixed up as repulsive a mixture as ever was stirred together in a table-spoon. I swallowed the nauseous mess, and that one meal sufficed me for the space of forty-eight hours. And during all that time, I could not have enjoyed a viler taste in my mouth if I had swallowed a slaughter-house.... Finally, after rumbling, and growling, and producing agony and chaos within me for many hours, the dreadful dose began its work, and for the space of twelve hours it vomited me, and purged me, and likewise caused me to bleed at the nose.

... Since then, I have gradually regained my strength and my appetite, and am now animated by a higher degree of vigor than I have felt for many a day. 'Tis well. This result seduces many a man into taking a second, and even a third "wake-up-Jake," but I think I can worry along without any more of them. I am about as thoroughly waked up now as I care to be. My stomach never had such a scouring out since I was born. I feel like a jug.... I shall never swallow another myself—I would sooner have a locomotive travel through me...

... In conclusion, let me recommend to such of my fellow citizens as are in feeble health, or are wearied out with the cares of business, to come down and try the hotel, and the steam baths, and the facetious "wake up-Jake." These will give them rest, and moving recreation—as it were.

Clemens became fond enough of the imagery generated by Wake-up Jake that he used it again, a week later (August 27, 1863), in another newspaper article. Writing again for the Territorial Enterprise, he criticized the rival Virginia City Evening Bulletin for grossly overestimating the annual productivity of the mines in Nevada Territory: "The Bulletin folks have gone and swallowed an arithmetic; that arithmetic has worked them like a 'wake-up-Jake'; and they have spewed up a multitude of figures.

In 1865, two years after his Wake-up Jake encounter, Clemens was still intrigued by the purgative effects of patent medicines, now in the form of a product known as Brandreth's Pills. Benjamin Brandreth was an Englishman who moved to New York and started making and selling Brandreth's Pills in the mid-1830s. He achieved immense success, and within a few years he needed an entire Broadway block for his factory and offices. Brandreth's Vegetable Pills were advertised in the Golden Era of 1865 as purgatives to "expel from the body all those evil geniuses" which cause disease. "Purgation with Brandreth's Pills purifies the blood & cannot fail to cure when enforced in time," claimed Brandreth, who further proclaimed that "this knowledge is second only to Christianity in the benefit it is capable of conferring upon mankind." 

In a bizarre juxtaposition of images, Clemens demonstrated his familiarity with Brandreth's Pills when he wrote in the San Francisco Chronicle in June 1865 to praise banjo music as "genuine music—music that will come right home to you like a bad quarter, suffuse your system like strychnine whisky, go right through you like Brandreth's pills, ramify your whole constitution like the measles, and break out on your hide like the pin-feather pimples on a picked goose.

Patent medicines may have interested the young Sam Clemens for the gastrointestinal effects they produced and the slapstick humor to be derived, but an older Samuel Clemens was fascinated by patent medicines for another reason—the ludicrous but highly effective manner in which they were promoted. From the 1886 Brandreth Annual Calendar (a Farmer's Almanac—style brochure which not only listed the times of sunrise and sunset and the phases of the moon, but also included numerous testimonials) comes the following history:

BRANDRETH'S PILLS.
Not for Ages, but for All Time.

The late Dr. Benjamin Brandreth introduced Brandreth's Vegetable Pills to the people of the United States, May 18th, 1835. Since then there has been sold of this bloods-purifying purgative sixty-five millions of boxes, and it still holds the foremost place as the most popular medicine of the present time. A medicine which has been a household remedy for over fifty years, and used by over a hundred and
fifty millions of persons in that time, must have great merit. The theory of Dr. Brandreth was simple—“Purge away with Brandreth’s Pills the old diseased and worn-out body. Replace the discharged matters of the system with good simple food, and thus build up a new and sound body in place of one feeble or diseased.”

Man is born again every two or three years. His body wears out and is re-made from food. The process is so accelerated by purging with Brandreth’s Pills that in two or three months it can be made anew. But this theory can only be carried out by Brandreth’s Pills . . .

Circulars advertising patent medicines were ubiquitous in almost every American home; one patent medicine proprietor claimed that only the Bible exceeded his almanacs in circulation, and advertising for the nostrums has been described as “American evangelism applied to material things.” Various patent medicines employed testimonials from national figures such as William Henry Harrison, Martin Van Buren, Andrew Jackson, and John Marshall. Gushing testimonials from the very believable, sincere, and honest common citizen were a significant component of the marketing effort. One newspaper editor advised that “If your brains won’t get you into the papers, sign a ‘patent medicine’ testimonial. Maybe your kidneys will.”

A testimonial in Brandreth’s 1886 calendar makes a typical claim:

Inflammatory Rheumatism Cured.

I am a notary public and reside in the village of Far Rockaway. Brandreth’s Pills have done me so much good that I feel it a duty that I owe the community to make my wonderful cure known. Ten years ago I was attacked with inflammatory rheumatism and confined to my bed . . . I suffered excruciating pain, and was entirely helpless for four months. I had several physicians, and exhausted my money in paying for different remedies. Nothing did me any good, and I never had any cessation of pain except when I took opiates. . . .

In January, 1884, I heard through Michael Holland, Postmaster at Rockaway Beach, that Brandreth’s Pills were an infallible cure for rheumatism . . . I took two Pills every night for ten nights, when I found my appetite very much improved, and the pain and swelling in my joints began to decrease. In the next twenty days, taking the Pills every night as before, I got very much stronger and better, and I only had to use one crutch. I continued taking the Pills with the very best result for the next thirty days, when I got entirely well, and abandoned the other crutch and found myself free from pain, free from swelling, and entirely free from rheumatism.

Sam Clemens—a remarkably fertile wit

Clemens appears to have been entertained by such testimonials, which he parodied in a letter he wrote on February 10, 1878, in mock praise of his own invention, the Self-Pasting Scrap Book:

Certificate.

Messrs. Slote, Woodman & Co:
I hereby certify: That during many years I was afflicted with cramps in my limbs, indigestion, salt rheum, & enlargement of the liver, & periodical attacks of inflammatory rheumatism complicated with St. Vitus’s dance, my sufferings being so great that for months at a time I was unable to stand upon my feet without assistance, or speak the truth with it. But as soon as I had invented my Self-Pasting Scrap Book & begun to use it in my own family all these infirmities disappeared. In disseminating this universal healer among the world’s afflicted ones you are doing a noble work; & I sincerely hope you will get your reward—partly in the sweet consciousness of doing good, but the bulk of it in cash.

Very Truly Yours
Mark Twain

Given under my hand this 10th day of February, A.D. 1878.

There is still humor here, but not of the slapstick variety in which gastrointestinal function is the punch line for a twenty-eight-year-old reporter intent on amusing his friends; instead, there is a flavor of cynicism, albeit light-hearted in nature, in which the deception of the consumer for personal financial gain is now the major theme of interest for a forty-three-year-old Sam Clemens.

In fact, Clemens had been tuned into the financial implications of patent medicine marketing at least five years earlier when he described the enthusiasm of the fictional Colonel Sellers for patent medicine profiteering in The Gilded Age (1873):

I’ve been experimenting (to pass away the time,) on a little preparation for curing sore eyes—a kind of decoction nine-tenths water and the other tenth drugs that don’t cost more.
than a dollar a barrel . . . before many weeks I wager the country will ring with the fame of Eschol Sellers' Infallible Imperial Oriental Optic Liniment and Salvation for Sore Eyes—the Medical Wonder of the Age! Small bottles fifty cents, large ones a dollar. Average cost, five and seven cents for the two sizes. . . .

. . . . Annual income—well, God only knows how many millions and millions apiece! 10p87–89

Twenty years later, in 1893, Clemens suggested that his brother Orion take out a trademark on a product to be named “Clark's Swift Death to Chilblains.” As Sam told Orion, the “swift death” was nothing more than ordinary kerosene, and could be “prepared for a song & sold at 1000 per cent profit” if Orion would simply add enough perfume to disguise the smell and the color.11 The financial potential of the patent medicine business continued to be on Clemens's mind in 1898, when he described the fictional “Dr.” Harkness of Hadleyburg as “one of the two very rich men in the place . . . [and] proprietor of a mint; that is to say, a popular patent medicine.”12p70

Clemens . . . gaining strength from attacks on patent medicine

By 1905 the seventy-year-old Clemens was in his so-called dark years after suffering a series of financial setbacks and family tragedies. In November of that year he received a circular from San Francisco patent medicine seller J. H. Todd, touting the virtues of “T. Duffy's Solution, the Elixir of Life” as a “Blood Purifier, Antiseptic, Disease Destroyer” and the “Giver of Life Everlasting.” Todd wrote a cover letter to Clemens:

Mr. Samuel Clemens.

Dear sir.

Allow me to call your special attention to matters in the enclosed circulars relating to Health & Life and how to retain them in the Body as long as you want & wish without Disease-Death, and always in youthful feeling.

When each has become cognizant of the above fact and put it in operation on themselves—then & not until then will we have Universal Peace. . . . Pure Natural Reason has now been attained and the wielder of it is more powerful than Armies-Dynamite or Gunpowder as Reason must & will control all, & none can resist it.

The Age of Reason is now begun & will never end again.

Will be pleased to answer any questions regarding the Truth of Natural Life.

I am Yours Truly

J. H. Todd13

Clemens was intrigued enough by the enclosed circular to draw three “fists” in the margins to point out portions of particular interest to him. Two of his “fists” called attention to sections of the brochure that contained recommendations to “eat the right kind, and drink the right kind of Natural Pure and Fresh Drinks and Foods, that are of Nature's producings and not of Man's makings or creatings or compoundings,” including “Fresh Milch, Fresh Beef and Mutton, Fresh Butter, Fresh Bread of wheat's making, Fresh Rice in any style, Fresh Sweet Green Corn in season, Fresh Sweet, New Green Peas in season, Fresh Oat Meal as you wish it.” Clemens's third marginalia “fist” drew attention to an earlier section of the pamphlet that described the Elixir itself:

By the Secret Process of the Purification of The Solution Elixir, it is made the Life Elixir, and PURIFIED to an equality, of more than A THOUSAND TIMES MORE PURER than the Purest Water on the face of the Earth, thus it purifies and destroys all impurities in the Air, Water and MATTER, thereby being their ELIXIR by resurrecting them to NEW LIFE again.14

The circular continued with an enthusiasm that was almost as evangelical as its style was babbling:

The Solution as The Elixir of Life, is the Sanitary Water made and purified cleanly, to absorb all Unsanitary, Foul and Diseased Matters, as foul water, foul air, diseased and putrid flesh or blood, and foul gases of Malarious Natures, to condense, absorb and purify them, by its PURITY of PURIFIEDNESS . . .

. . . . the Solution as The Elixir of Life is the Good of all Good in its One Goodnesses, its GOOD GOOD PURITY, to preserve your Blood's life without Diseases or Death to your Health's Everlastingnesses. This expresses the Good of Good in One Goodnesses of Good Feeling, and no Wealth is its equal, and no Wealth can buy or purchase it, to be as good to you as your Blood's health.14

Clemens dictated a letter to his secretary, Isabel Lyon, in response to Todd's letter and brochure. Although he proofread and signed the letter, he never mailed it, so it is possible that
it was written more as a method of venting his anger than a means of communication. Regardless of his intention when dictating it, this letter is his angriest commentary on the patent medicine industry and its entrepreneurs:

Per Isabel V. Lyon, corrected and signed by SLC:

Nov. 20, 1905

J. H. Todd—
1212 Webster St.
San Francisco
Cal.

Dear Sir

Your letter is an insoluble puzzle to me. The handwriting is good & exhibits considerable character, & there are even traces of intelligence in what you say, yet the letter & the accompanying advertisements profess to be the work of the same hand. The person who wrote the advertisements is without doubt the most ignorant person now alive on the planet; also without doubt he is an idiot, an idiot of the 33rd degree, & scion of an ancestral procession of idiots stretching back to the Missing Link. It puzzles me to make out how the same hand could have constructed your letter & your advertisements. Puzzles fret me, puzzles annoy me, puzzles exasperate me; & always, for a moment, they arouse in me an unkind state of mind toward the person who has puzzled me. A few minutes from now my resentment will have faded & passed, & I shall probably even be praying for you; but while there is yet time I hasten to wish that you may take a dose of your own poison by mistake, & enter swiftly into the damnation which you & all other patent medicine assassins have so remorselessly earned & do so richly deserve.

Adieu, adieu, adieu!

Mark Twain15

Has anything changed since Clemens’s day?

Clemens’s view of patent medicine did evolve throughout his lifetime. His childhood remembrance of Perry Davis’s fiery Pain-Killer was light-hearted burlesque; his unmailed 1905 letter to J. H. Todd about the “Elixir of Life” was as hostile and vitriolic as anything he could write, even though Todd was no more of a scoundrel that Davis (they both promised that they could cure all ills). Patent medicine had not changed through the years, but Sam Clemens had. A young and resilient Sam Clemens could be amused by the fact that Perry Davis’s oxymoronic Pain-Killer was, if anything, a superb “pain producer”; years later, Todd’s cynical promise that his “Elixir of Life” would ensure “Health & Life . . . without Disease [or] Death” was not a joking matter to an older and wiser Sam Clemens. It was, in fact, the most inexcusable of cruel jokes.

References

7. 1886 Brandreth Annual Calendar.

The author’s address is:

Section on Endocrinology and Metabolism
Wake Forest University School of Medicine
Medical Center Boulevard
Winston-Salem, North Carolina 27157
E-mail: kpober@wfubmc.edu
Not long ago I received an e-mail message from our medical center’s Institutional Review Board announcing that my three-year certification as a Human Subjects Investigator had just lapsed. The message urged me to immediately log on to our web-based Protection of Human Subjects curriculum and work my way through the twelve modules of the refresher course, which, as a recidivist, I was entitled to do, instead of retaking the considerably more extensive basic course. Shortly thereafter, I cleared the decks and dove into the endless complexities of minimal risk, waiver, vulnerable populations, protected health information, and the Health Insurance Portability and Accountability Act. Although the material was quite engaging, I soon noticed a peculiar sleepiness creeping over me. My mind began to wander, and I found myself daydreaming about my first experience as a clinical investigator in 1973 at a field clinic in Lower Greasewood, Arizona.

The Indian Health Service

As a naïve young physician in the Navajo Area of the Indian Health Service, I had been assigned to the clinic at Greasewood, which served an elementary-level boarding school run by the Bureau of Indian Affairs, as well as a scattered community of Navajo people. Imagine, if you will, a painted desert, much like Monument Valley, which provided the background for so many John Wayne movies and jeep commercials. A small settlement sits at the base of a sandstone mesa. There is a water tower, a sprawling school building, a trading post, a few streets of stucco houses, and, of course, the dry arroyo with its smattering of cottonwood trees. If you look carefully in the distance, you can visualize family camps spotted here and there across the valley, each one consisting of a cluster of houses and hoghans and pick-up trucks. This is Lower Greasewood, where, with $3000 for expenses and crates of free pills, my colleague Keith Reisinger and I undertook to learn whether vitamin C prevents the common cold.1

Vitamin C—cure for the common cold?

Linus Pauling’s *Vitamin C and the Common Cold* was a big sensation in the early 1970s.2 The prevailing scientific opinion was that the Nobel Award-winning chemist had grown soft in the head with age. Others claimed that Pauling, an inveterate eccentric and self-promoter, was simply pulling the public’s leg with his claims that one could prevent or cure the common cold (and later, cancer) by taking high doses of vitamin C.

Ramshackle lopsided

Jack Coulehan, MD, MPH
However, the public fell for it and bought millions of Pauling’s book. The studies that Pauling cited in support of his claims had gaping holes in methodology, yet not many researchers had tried to remedy the situation because there seemed to be no solid conceptual basis for vitamin C prophylaxis. Why on earth would pharmacological doses of ascorbic acid prevent colds?

Nonetheless, a few clinical epidemiologists had taken up the challenge. For example, Charles Anderson and his colleagues in Toronto randomly allocated vitamin C (1 gram per day) or placebo to adult volunteers for an eight-week period and found that the vitamin C group experienced thirty percent fewer days of disability from colds, although the numbers of episodes were not affected. In England, Wilson and Loh studied schoolchildren over a nine-month period. They assigned children either to placebo or to 200 mg or 500 mg ascorbic acid daily. In girls taking the 500 mg dose, catarrhal cold symptoms were reduced by fifty percent, but there was no significant reduction in boys. All in all, it was a mixed bag, but sufficient to keep the fire for vitamin C burning brightly.

Greasewood Clinic was a busy place for its lone doctor. On clinic days we often treated fifty or sixty patients, not counting night calls for sick children in the boarding school. There was an endless parade of kids with colds, coughs, ear infections, and sore throats. At home my wife and I had a new baby, as well as a demanding two-and-a-half year old. Nonetheless, I came up with the romantic idea that Greasewood was the ideal place to test Linus Pauling’s claims about vitamin C. How difficult could it be? Although Institutional Review Boards didn’t exist then, I had gotten an “A” in my epidemiology course in medical school. Moreover, my mentor was Dr. Kenneth Rogers, chair of the Community Medicine department at the University of Pittsburgh, who had worked with the Indian health Service for many years.

An attempted RDBCT

When I shared the idea with Keith Reisinger, a pediatrician stationed at Fort Defiance Hospital about fifty-five miles from Greasewood, he immediately jumped on board. As expected, Ken Rogers offered to provide assistance in design and statistical analysis. We checked the Physicians’ Desk Reference to determine what companies manufactured ascorbic acid tablets. The first one listed was Hoffman-LaRoche, so a few weeks later I sent a cut-and-pasted protocol to them, along with a request for money, laboratory services, and ascorbic acid and placebo study tablets. We had decided to randomize the six hundred-plus children in Greasewood school to two study groups. The vitamin C group would receive either 1 gram (grades one through four) or 2 grams (grades five through eight) daily for fourteen weeks. The placebo group would take identical-looking sugar pills. Our protocol included observations in the clinic, as well as active surveillance. We planned to periodically monitor children in their classrooms for symptoms. Finally, we proposed performing blood ascorbic acid levels on a random subset of children before, during, and after the intervention. I typed this protocol on the clinic typewriter, using almost transparently cheap paper from the supermarket in Gallup, New Mexico, and plenty of white correction fluid. The document didn’t look too bad, if you discounted the fact that every “m” and “p” smudged.

It didn’t take long to get word from Hoffman-LaRoche. I wouldn’t have been surprised if they had thought it might be a joke, but they were intrigued enough to send a representative to Greasewood, who came bumping into town in a rented car a couple of weeks later. When he saw that Keith and I were actually doctors and that such a place as Greasewood boarding school existed, he must have been surprised and relieved. It wasn’t long before we were in business.

The school staff was behind us from the start. Each year waves of winter illness swept through the dormitories. Many children were sick so often that illness seriously compromised their performance, and some had to repeat grades due to excessive absence. The teachers and other employees were thrilled with the prospect of reducing this problem. Likewise, parental consent was a piece of cake. The Navajo people had a rather negative attitude toward anthropological research, as evidenced by their ironic saying that the typical Navajo family consists of parents, children, grandparents, and an Anglo anthropologist. However, medical research was more acceptable and “vitamins” projected an aura of strength and good health. Parents tended to look upon our project more as part of the clinic’s treatment program than as an investigation to determine whether vitamin C works. While we held community meetings to explain the situation, and our consent form clearly described the situation, parents generally believed that nothing but good could come from plying their children with vitamin C. The notion of “placebo” was inexplicable. One teacher explained that parents thought that placebo was simply a different kind of vitamin, possibly less powerful than C. However, chance and probability were the biggest barriers to understanding because traditional
Navajo medicine is always efficacious; a healing ceremony properly performed invariably achieves its intended goal. The only room for doubt lies in the quality of performance; adverse outcomes can only occur if the haatali—medicine man—makes a mistake, or consciously uses his power in a negative way (if, for example, he is really a wolf-man, rather than a true haatali).

The formal approval process for our investigation included two steps, the first from the research committee of the Navajo Area Indian Health Service and the second from a similar committee of the Navajo Tribal government. After over thirty years, I remember few details, other than that in both cases I was required to appear in person and answer questions. Both groups were enthusiastic for vitamins and assumed that our study could not possibly be harmful. Another impression is that of speed. They must have approved the protocol within a month or so of its submission. I believe the idea to do this study occurred to me in September 1972. The whole process of designing the protocol, obtaining support and funding, obtaining approval, getting parental consent, and setting up study procedures took just over three months. We started collecting data for our fourteen-week investigation in January 1973.

Data analysis

Afterwards, we spent a weekend tallying data sheets in Keith Reisinger’s living room at Fort Defiance. This old settlement nestled in a grove of cottonwood trees in a small valley between a rock wall that jutted behind the hospital and a gradual rise of sandstone that eventually became Kaibeto Plateau. The buildings were made of wood or stone or stucco. Like most of the other houses, Keith’s was surrounded by chain link fence designed to keep out horses, coyotes, and aggressive dogs. He and his wife had a strip of garden along the side. In the summer it featured three rows of corn that were eventually ravaged by horses that had long ago learned to nose open the U-shaped metal gate locks. They got into the Reisingers’ garden and ate the cornstalk tassels, so no fertilization occurred and they wound up with not a single ear of corn. Another illustration of nature’s balance. I sat on a plastic stool with data sheets stacked in my lap, while Keith lounged sideways against a stuffed chair, holding a clipboard. As I called off
data points—student 116, runny nose, cough, sore throat—he labeled rows and checked the appropriate columns.

We didn't have long to wait to hear the outcome of our work. In a few weeks we were inundated with computer printouts that told an exciting tale. Although vitamin C had not reduced the number of respiratory illness episodes seen in the clinic, overall days of illness were reduced by thirty-four percent in older children and twenty-eight percent in younger children. Moreover, in our classroom surveillance of children who had not been referred to the clinic, we found an overall twenty-six percent reduction of symptomatic days, although no reduction occurred in older boys. Our supplements produced biochemical results by substantially raising the children's baseline ascorbic acid levels, which, we discovered, had been well within acceptable levels in the first place. With utter self-confidence, Keith and I rushed to write up our depressing new results. Why not just let them sit? However, urged by Dr. Rogers, our righteously./

Sudden fame

The response to our publication was breathtaking. In 1974 the media had yet to embark upon its steady diet of amazing medical developments. So when reporters and TV news programs seized on our twenty-six to thirty-four percent reductions in symptomatic days, we were taken by surprise. My parents sent a clip of the Associated Press release from their Steubenville, Ohio, Herald Star, and friends in Pittsburgh forwarded a stream of clippings and letters, mostly expressing gratitude that we had freed ourselves from Big Medicine's conspiracy against vitamin C. Even Newsweek published a blurb on the study.

However, the biggest boost to my ego occurred several months before the New England Journal article appeared. Evidently notified of preliminary results by our contact at Hoffman-LaRoche, Linus Pauling invited me to present our data at the First International Conference on Vitamin C he held at Stanford in autumn 1973. This was a big deal! To be acknowledged by an icon! To hobnob with real scientists! When the time came, my family and I sweated our way across Nevada in our old jeep with its inoperable air conditioning system. We were hillbillies hitting the big time, arriving at the hotel in Palo Alto toting our duffel bags and Coleman stove. My talk turned out to be a hit among true believers. PAULING PROVED TO BE RIGHT! the headlines screamed. At the reception Linus came up to me and held out his elegant hand and shook mine before immediately going elsewhere.

The second Greasewood study

Though the Greasewood project had become famous, my colleagues and I were not about to rest on our laurels. By this time Hoffman-LaRoche had fallen in love with us and expressed a willingness to give us a huge grant for a second study—a cool $15,000 in addition to supplies and laboratory work. Flush with money now, we were able to hire a research co-coordinator for the proposed study, which included a second boarding school (total of 868 subjects) and a longer study period (fifteen to eighteen weeks). But where could we find a co-coordinator? It turned out that the wife of a Navajo legal aide lawyer in Window Rock had taken a microbiology course in college. She was also a vegetarian. Since our study dealt with nutrition and infection, Susan Eberhart seemed like a perfect fit.

She was. The second study ran much more efficiently and professionally than the first. There were the usual glitches, where children switched study tablets with their friends, or disappeared from school for weeks to herd sheep for their families, but we were positive that our work would be definitive. Of course, we were so naïve that financial gain never entered our minds. That was undoubtedly a reflection of the more altruistic culture of medicine and research that existed in the early 1970s. In any case, we shipped the second set of data to our statistician in Pittsburgh, confident that ascorbic acid supplements were responsible for the substantial reduction in acute respiratory illness that we had noted at the schools during the first part of 1974.

When the analysis appeared, my hopes were dashed. No difference at all. Children receiving 1 gram of ascorbic acid daily had no fewer episodes of respiratory illness or days of symptoms than those receiving placebo, even though their ascorbic acid blood levels were consistently higher. By that time I had moved on to Baptist Hospital in Winston-Salem, North Carolina, to complete my final year of internal medicine residency. Lower Greasewood seemed very far away. I was up to my nose in clinical medicine. There was no time, I told myself, to write up these depressing new results. Why not just let them sit? However, urged by Dr. Rogers, our righteous mentor, my colleagues and I dutifully put together a report of the second trial, which the New England Journal published in 1975.

We proposed several explanations for the contradictory results, finally suggesting that ascorbic acid might have a minor antihistaminic effect, which could produce variable symptomatic relief, depending on the type of cold and its manifestations. In retrospect, though, the failure to replicate the data probably had a more complex and scientifically less palatable explanation—a mixture of unperceived bias, random variation, and unexpected powerful placebo effect. As to the latter, we observed far fewer episodes of illness than expected that winter and spring. The community had already accepted the belief that vitamin C prevents colds and despite our explanations to the contrary, children and staff were convinced that everyone would benefit. Hence, they did. Early 1974 was probably the healthiest period in the history of Greasewood and Toyei schools. Unfortunately for us, the cloud of prophylaxis that descended over the children paid no heed to which study group they belonged to.
We believe positive data

Thus ended the ramshackle lopsided vitamin C prophylaxis project. We published two papers in the New England Journal of Medicine, of which the second negated the first. The earlier paper created a barrage of publicity in national media. The second study came and went without public notice. The net effect to science was simply to confirm that ascorbic acid has no reliable effect on the common cold. The most positive outcome was the sense of camaraderie and enthusiasm the studies created at Greasewood and Toyei boarding schools and their little communities. We had a lot of fun. The kids felt special. The teachers and staff believed they were contributing to the health of their charges. And—at least I like to believe—nobody got hurt.

Nowadays, of course, Navajo school children would rightly be considered a vulnerable population, susceptible to undue influence and manipulation. Our informed consent process would never make the grade, not only because of inadequate forms, but also because these studies were widely and enthusiastically misunderstood by the consenters. Likewise, the processes by which our protocols received tribal and IHS approval would never meet today’s high standards. Nonetheless, the vitamin C experience taught me lessons that have held up pretty well during the past thirty years. For example, it made me highly critical of the academic tendency to seek funding sources first and then generate ideas to fit them, as well as the parallel concept that you can legitimately blame your poor productivity in clinical research by citing an unfortunate lack of funding. However, I have to admit that vitamin C’s biggest influence on my career is the fact that I’ve spend so much of it working in medical ethics and interpersonal communication, rather than undertaking further clinical trials.

References

The author’s address is:
HSC L3-086 Health Sciences Center
School of Medicine
Stony Brook University
Stony Brook, New York 11794-8036
E-mail: jcoulehan@notes.cc.sunysb.edu

Reflection

I could have been one of you.
Student deferral rescued me.
Decades have passed.
Would you still be alive?
Have your loved ones visited?
Would you have solved a mystery?
You were caught in madness,
And dead before you could escape it.
This cold March sunrise
illuminates your names with the flag.
A reflection of your bravery.
A salute to your life.

Steven F. Isenberg, MD

Dr. Isenberg (ΑΩΑ, Indiana University, 1975) is assistant professor of Otolaryngology—Head and Neck Surgery at Indiana University School of Medicine. He also took the accompanying photograph. His address is: 1400 North Ritter Avenue, Suite 221, Indianapolis, Indiana 46219. E-mail: sisenberg@good4docs.com.
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Irritable Bowel

I often have the urge
to howl
At my most unruly bowel.
Cramps and gurgles
do betray
its inability to stay
quiescent
and at bay
by night . . .
. . . or day.
When I want rest
that peristaltic pest
makes an endless primal growl,
and prompts a most uncivil scowl
as I stagger to my feet,
then stumble to the seat
of blessed bowel relief
from semiliquid,
semisolid
products of my rampant colic.
Pepto-Bismol does no good.
Kaopectate is no better.
Imodium gives some release
from my cramped belly’s fetters.
I rant and swear
but still take care
not to soil my underwear;
as I face a foe most foul,
my hyperactive, irritable bowel.

Myron F. Weiner, MD
Mozart composed for the—grass carp?
No, dear, the glass harp.
The heat in Phoenix is ninety-two?
No, the heat index.
You put on—thumb-lock?
No! Sun-block.
A nude groom sleeps clean?
You know I wouldn’t say that!
I said a new broom sweeps clean.
Did you say, “Iron filings form The Force?”
I said I’m filing for . . . Oh, forget it.

David Goldblatt, MD

Dr. Goldblatt (ΛΩΑ, Western Reserve University, 1955) is professor emeritus of Neurology and the Medical Humanities at the University of Rochester School of Medicine and Dentistry in Rochester, New York. His address is: 232 East Lake Road, Penn Yan, New York 14527. E-mail: dgoldblattmd@verizon.net.