



The Pest Hospital: Memory, Vaccines, and Serum Therapy in Kansas City

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Abstract

A medical narrative from a woman in her 90s describes her childhood bout with diphtheria in Kansas City, Missouri, apparently immediately after vaccination, her confinement in the “pest hospital,” and her treatment with what she understood as a blood transfusion from a donor who was found through a radio appeal. In this essay, we trace the narrative back to the institutions, medical practices, and historical context, examining both the underlying history of medical practice and scientific understanding that is reflected in her experience and also the contexts of that history, including racial and religious attitudes.

Keywords Medical narrative · Medical history · Pediatrics · Diphtheria · Scarlet fever · Contagion · Serum therapy · Vaccination · Antiserum

Norma Jeanne Walters was born in 1927 in Kansas City, Missouri. In her 90s, she lived in Minnesota and enjoyed telling stories from her Kansas City childhood: about going door-to-door with her mother for FDR (Franklin Delano Roosevelt) in 1935 or the annual trips with her parish priest, Father Donahue, to Union Station, where they would eat at Wolferman’s, the restaurant which also provided food for the trains. When she was 94 years old, in late 2021, she read a magazine piece one of us authored about the history of diphtheria and reached out because she had a diphtheria story to tell from 1937; it was intriguing, medically and historically, and we wanted to understand it better. As we pursued the often-elusive details, it raised issues about how to understand—and corroborate—a first-person medical story that happened long ago: about the realities of pandemics past—from infection control and quarantine to stigma and fear about vaccine development and vaccination campaigns—and also about the historical contexts of racial disparities and religious attitudes. It also raised questions about how to think about experimental therapies and medical decision-making.

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Perhaps most of all, we saw how an individual medical story could reveal the layering of historical and medical understanding, as we look at how Norma comprehended her own medical story as a child and try to reconstruct how that knowledge reflected the state of medical knowledge and medical practice at the time. In attempting to understand the medical care that was delivered—and that Norma understood to have saved her life—we find ourselves considering the progress of bacteriology and immunology, the regulation and safety of biological agents such as antitoxins and vaccines, the emotional and infectious consequences of hospitalization, and the ethics of experimental last-ditch therapies. We will let Norma tell her story and then describe our own attempts to track the details she provided, answering the questions that followed from her account.

Norma attended St. Stephen's School, a small Catholic elementary school in northeast Kansas City, where many of the city's Catholics and Jews—immigrants and descendants of immigrants primarily from Germany but also other European countries—once lived. She recalled that “in December 1936 or January 1937, two people came to my school with [a] vaccine for diphtheria. This was an exciting event for all of us at the school.” Soon after receiving her vaccination, Norma got sick, and she recalled the diagnosis: “Dr. Neff was our family doctor. He came to our house and examined me and told my parents I had gotten diphtheria from the shot because of [a] faulty vaccine.”

Dr. Neff told her parents that Norma was very sick and would have to go to the hospital, and although she was not sure what her symptoms were, she remembered: “It was the kind of sick where you don't care.” A big red quarantine sign was hung on their house, and her mother and younger sister (who did not get sick) were not allowed to leave.

But the sick nine-year-old did not stay home, she recalled: “They took me to the ‘pest hospital’ (that is the only name I remember being used). I was in a room by myself and was sick and scared and lonesome.” No visitors were allowed, she said, “but a young intern named Dr. French would come in the late afternoon, after his shift ended, and read to me. Unfortunately, he brought books from the scarlet fever ward, and I contracted scarlet fever in the hospital. As I became more ill, they let my father come once to see me.”

Presumably, they let her father come because they thought the child might be dying. Norma was critically ill, and her doctors came up with a last-ditch idea, which she described as follows:

Dr. Neff had the hospital broadcast over the local radio for a person who had had both diphtheria and scarlet fever but had not been vaccinated, as that person would have antibodies that might help me. A Jewish neighbor who lived next door to my parents when they first married in 1925, Mrs. Berger, called the hospital and qualified. She came to the hospital and was put into a room next door to another room with a lot of lights. I was put in that room, and Dr. Neff explained that I would get some of [Mrs. Berger's] blood. I could see her legs.

More than eight decades later, Norma vividly recalled: “They took blood from her arm and came and gave me that blood. They did that same procedure again. I remember feeling dizzy and nauseous, altogether I think I was in the hospital for two or three weeks and started to feel better in the week following the blood transfusion.” She continued: “I remember that I was home for a week or two before I went back to school. I also remember that my skin peeled off my arms, legs, and abdomen.”

One of us is a pediatrician interested in the history of infectious diseases in children; the other is a long-time member of the Kansas City Jewish community who worked in the field of child advocacy and now writes about medical ethics. We tried untangling the mysteries of Norma's story, contacting physicians, librarians, administrators, and archivists

and visiting the site where Kansas City's earliest hospitals were located. We wanted to see what we could learn about what made her sick, the people and places who cared for her, and how she got better. We tracked Dr. Neff through medical histories and looked for the Berger family in the census, wondering if we could figure out some of the complexities of Norma's childhood memories.

First, we set about researching Kansas City's "pest hospital" and what became of it. The original was established in 1873 on Menges Island, a sandbar in the Missouri River, to isolate smallpox patients outside the city (Bates 1972, 31–32). The building burned; another was built on yet another island, but there were problems with pox-infected coffins washing away, and the river rose in 1887 and carried away the island and the pest house too (Levings 2017). There was subsequent controversy over where to relocate it, with angry citizens arguing at mass public meetings ("Pest House" 1904). In 1899, a contagion building, which came to be called St. George's Hospital, was included with other city hospital buildings being built at 22nd Street and McCoy Avenue—the area now carries the name Hospital Hill, and those old buildings have been replaced with new hospital facilities and medical offices.

By the 1930s, the "pest hospital" was a ward of the Kansas City General Hospital. In fact, until 1957, under segregation, there were two Kansas City General Hospitals, both public institutions: no. 1 was for white patients only, and no. 2 was for Black patients. White patients were cared for in a building that had been built in 1908 and expanded several times but was still struggling for space. When that new hospital was built, the Old City Hospital became the African American hospital, which was then replaced by a new custom-built building that opened in 1930, described as the "most modern public hospital in the country" (Rodgers 1962, 528).¹

Thus, we can locate this white child in Kansas City General Hospital no. 1, in the contagion ward, which retained its fearsome reputation as the "pest hospital." But here we also reached a dead end: the records from both Kansas City General Hospitals have been destroyed (Jason Roe, email communication, January 13, 2022).

How did Norma get sick, and was it related in some way to her vaccination? Diphtheria is caused by *Corynebacterium diphtheriae* bacteria, which infect the respiratory system and produce a bacterial toxin that can kill healthy tissue. The dead cells build up in the throat, and the toxin can also get into the bloodstream and damage the heart and nervous system. Diphtheria was profoundly feared in the pre-vaccine era; necrotic tissue in the throat could lethally block the airway, particularly in young children with small airways. The diphtheria bacterium had been identified in the 1880s, and scientists had been able to show that the potent toxin was actually what caused the disease. They had also developed a therapy at the end of the nineteenth century, and the diphtheria antitoxin, usually manufactured from horse serum, could save children's lives. Quality control was an issue, and the 1902 federal Biologics Control Act, regulating biological products, was enacted particularly in response to a tragic incident in St. Louis in which the diphtheria antitoxin had been manufactured from a horse infected with tetanus, resulting in 13 children treated for diphtheria actually dying of tetanus (DeHovitz 2014).

Even with better quality control, the diphtheria antitoxin was not infallible and did not produce lasting immunity; thus, preventing the disease, rather than treating it, remained the goal. By 1913, scientists had formulated a vaccine, mixing toxin and antitoxin, and studies were underway in New York City, first with school children and later with infants at the New York Foundling Asylum (Hammonds 1999). Early diphtheria immunization campaigns depended heavily on geography, but by the 1930s, major campaigns were underway in New York and many other cities, including Kansas City.

Norma received her diphtheria vaccine amidst a highly successful push to immunize children in Kansas City. In 1935, the community had the second-best diphtheria vaccination record of any large city in the United States; only Baltimore did better. By 1936, Kansas City had had no diphtheria deaths for several years. This was attributed to the city's decision to make immunization available to children as young as one year old so that 50 percent of children were vaccinated before they started school ("Against Diphtheria" 1937; "Toxoid to All Children" 1936). This strong record predated compulsory diphtheria vaccination for school children, which was not introduced in the Missouri State Legislature until 1947 (Trask 1947).

Norma had apparently not been vaccinated as an infant (perhaps she was born just a little too early for that campaign), and it is possible that parochial schools, such as the one that she attended, may not have played as prominent a role in these campaigns as public schools—but clearly, they were included. The vaccine did get to St. Stephen's, and regardless of who had manufactured that particular batch, it should not have contained live *Corynebacterium diphtheriae*; the vaccine combined antitoxin with inactivated toxin—the antitoxin protected the children while the inactivated toxin turned on their immune systems to produce lasting immunity. But an improperly prepared vaccine could be dangerous: in 1919, five children died in Dallas, and more got sick from what was thought to be "excessive amounts of toxin" in one batch of vaccine (Colgrove 2006, 87; original report "Medical News" 1919, 1778). Improperly prepared vaccines with insufficiently neutralized diphtheria toxin caused illness and deaths in children in Boston and Dallas (Hammonds 1999, 187). However, while the toxin might harm a child and produce symptoms of the disease, the vaccine was not supposed to contain bacteria—neither alive nor attenuated nor killed—so vaccination should not have resulted in a child being infected—or infectious—with diphtheria.

So, what actually happened to Norma Jeanne Walters? Maybe she did indeed get a dose of a bad vaccine, and maybe the toxin produced diphtheria symptoms. Or maybe she was already incubating a case of diphtheria and coincidentally got sick right after she had been vaccinated—but before the vaccine could produce immunity. She could then have developed a nosocomial case of scarlet fever, whether that infection was transmitted via the books that Dr. French brought or by the doctor himself, coming directly from the scarlet fever ward. Scarlet fever is caused by another toxin-producing bacterium, the Group A Streptococcus, or *Streptococcus pyogenes* (pus-producing streptococcus), which also causes strep throat. Scarlet fever and diphtheria were sometimes difficult to distinguish; both caused fever and severe sore throat. Certainly, the peeling skin Norma describes is more typical of the aftermath of scarlet fever—unless, of course, it is related to the treatment she received involving the woman who answered the radio appeal.

The child understood that treatment as a blood transfusion. Presumably, she was actually given human serum—spun down on the spot—as a last-ditch effort to provide her with antibodies. Serum therapy was attempted with many diseases, both viral and bacterial, in the early decades of the twentieth century when new discoveries in bacteriology led to great medical enthusiasm for this new biological armamentarium—and before the availability of antibiotics. Weaver wrote in 1918 that, even though the infectious agent for scarlet fever had not yet been identified, treating severe cases with convalescent serum had saved children who were severely ill (Weaver 1918). The article specifically notes that "in a few additional cases convalescent serum was combined with anti-diphtheria serum in cases of scarlet fever complicated by diphtheria" (Weaver 1918, 213).

In 1933, Hunt described a series of 882 patients with scarlet fever treated with "commercial concentrated and refined serum" and concluded that "scarlet fever antitoxin exerts a favorable influence on the clinical course of the disease," although he went on to note that 22.7 percent of those treated developed serum reactions (Hunt 1933, 1444 and 1447).²

Reactions were also common with the diphtheria antitoxin, which was usually made from horse serum. In fact, serum sickness was originally described in the context of its discovery and dissemination. With the arrival of antibiotics, serum therapy would fade in importance; today, scarlet fever and related infections are routinely treated with antibiotics, though antitoxin is still used for diphtheria, which now occurs mostly in settings where war or disaster has disrupted health care and vaccination.

Had Norma already received the diphtheria antitoxin during her hospitalization? Was commercial concentrated and refined serum available? Was the radio broadcast searching for a donor who might provide something closer to “hyperimmune” serum matched to the two diseases? Recent efforts to use “hyperimmune” or “convalescent” serum to treat sick patients during the COVID-19 pandemic have again highlighted the potential of serum therapy but also the complexities of manufacturing (or collecting) serum and determining its efficacy.

For a physician today, Norma’s story is intimidating, with its air of medical improvisation and invention: one admires the doctors’ determination to find a treatment, even as one wonders about testing and purifying the serum, let alone about risks and informed consent. But as an adult, Norma’s understanding was that her doctors thought she would die and that this donor—and this therapy—were responsible for her eight decades of subsequent life, with all its richness and relationships. Norma Jeanne Schleppegrell summed up her experience as follows:

As a 94-year-old woman who married and had eight children, a very dear husband of 70 years, and a successful career in mental health, I have been eternally grateful for the vaccine and am proud and grateful that Mrs. Berger gave me some of that special Jewish blood. This is a story that I have shared over my lifetime.

Medical history should remind us to be both grateful and humble. Any pediatrician today might give thanks for never having lost patients to diphtheria or scarlet fever. But this narrative also asks us to confront some of the harsh realities and wrong directions of health care. New therapies mean new side effects and syndromes, and new vaccines raise issues of manufacturing error, quality control, and government regulation—and the necessity of honest reporting and keeping public trust. Norma’s story took place at a moment of burgeoning medical confidence, bolstered by the discoveries of germ theory, and every aspect of what happened to her—from the vaccination to the contagion ward to the serum therapy—was informed by the intersection of scientific understanding, therapeutic confidence, and consequent risk. From our current vantage point, considering the intense political polarization around vaccines and around therapies that became part of the story of the COVID-19 pandemic, we can acknowledge the historical moment when the ability to vaccinate against diphtheria was seen as a great step forward in protecting children. Norma became ill at a moment when diphtheria was already becoming rare in Kansas City—thanks to vaccination—and her doctors’ determination to save her life by any means possible may have reflected a relatively new sense that the disease should not kill any child.

The story evokes religious currents that noted, but welcomed, a Jewish woman donating blood to a Catholic child—at a historic moment, we might note, two years after the Nuremberg Laws had been passed in Germany, forbidding marriages (or sexual relations) to keep the Aryan race protected from “Jewish blood.”

In the US, racism and segregation were built into medical treatment and medical institutions. Would this last-ditch treatment—starting with the radio broadcast—have been offered to a child in the Black hospital? Would a Black donor have been acceptable for a white child? The American Red Cross would initially exclude Black donors from its wartime blood drive—which, ironically, was originally directed by a distinguished African

American surgeon, Dr. Charles Drew, who came to be known as the “father of blood banking” (Tan and Merritt 2017). Dr. Drew left the Red Cross, which decided in 1942 to segregate donated blood by race, sparking controversy and sustained protest that persisted until after the war, when the segregation ended (Guglielmo 2010).

Norma’s story leaves us, for all our modern medical understanding, with questions about what actually happened: what made her sick, how her doctors understood it, how she was treated, and what made her better. It reminds us that, whatever our best medical responses, there will come a time when our practices and our institutions—and our institutional practices—will seem obscure, ignorant, and difficult to disentangle or explain.

Norma’s vaccine may have made her sick—or simply failed to protect her. The contagion ward may have been the source of an additional—iatrogenic—infection. The last-ditch therapy sounds almost improvised, in a way that feels especially familiar given the exigencies of the current pandemic. Norma’s story reminds us that medical therapies and “best practices” are always the product of current understanding and belief, crossed with both medical and social conditions; that every “advance” carries risks and consequences; and that looking closely at a single child’s story shows us how narrative and memory can lead us into the complex layers and uncertainties of medical history.

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Endnotes

¹The newly built hospital was almost immediately overcrowded—as was the white public hospital—and both patients and staff struggled with political challenges and racism, which affected the institution and the lives of the patients it served; yet the hospital was regarded as an important teaching institution and trained many Black physicians and nurses (see also Wells 2022; Lee, n.d.).

²It is perhaps worth noting that the article following Hunt’s in the 1933 issue of *JAMA* proposed an antitoxin treatment for tularemia, reflecting the tremendous interest in antiserum therapy for a wide range of infectious diseases during the 1930s.

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