
From, *Clinical Applications of the Polyvagal Theory:
The Emergence of Polyvagal-Informed Therapies.*
Stephen Porges and Deb Dana, editors. Norton, 2018
Distributed with permission of the publisher.

8

Brain-Empowered Collaborators: Polyvagal Perspectives on the Doctor–Patient Relationship

George Thompson, MD

George@GeorgeThompsonMD.com

Abstract: Brain-Empowered Collaborators describes applications of Polyvagal Theory to understand physician–patient relationships. Awareness of the neurophysiology underlying reactions to illness and medical treatment informs physicians of when to build trust and when to gather medical information. By attuning to their polyvagal state and sending verbal and nonverbal signals of safety, physicians can activate the patient’s social engagement system, the optimum neurophysiology for decision making, comfort, and collaboration. A grounding in Polyvagal Theory enriches the tender and heroic partnership between patients and their physicians, offers insight into physician well-being, and suggests pathways to peace for the planet as well. Relationship becomes medicine.

MARK ROBERTS, a pediatric oncologist, knew that the boy could die before the day was over. Fourteen-year-old Tannor had been diagnosed with leukemia a year earlier. Now he was lying in a hospital bed with a fever and a tender belly, his mother a wary guardian at his side. The two doctors going off duty told

Dr. Roberts that they were worried about appendicitis, potentially fatal when leukemia and chemotherapy have conspired to destroy the immune system. When those doctors had tried to examine him, Tannor had thrown them out of the room.

It was Dr. Roberts's turn. Tannor's mom was stationed in a chair to the right of his head, where she could see Dr. Roberts through a window well before he arrived. Tannor was motionless, his sheet pulled up to his shoulders, his legs extended stiffly down the bed. "When I entered," Dr. Roberts told me later, "Tannor's mother glared at me, but he kept staring straight forward, not even acknowledging my presence. Had he made the smallest gesture, she would have told me, 'It's time for you to go.'"

Tannor's brain had made a critical and potentially lethal error. It gauged the doctors to be dangerous, and summoned defensive systems to protect him from potential harm. These defensive systems were preventing him from allowing the examination and treatment that could save his life. He was in the midst of a neurophysiological crisis, on top of his surgical emergency. For Tannor to survive, his brain needed to immediately reevaluate what was safe and what was dangerous. But this neurophysiology arises below the cortex, outside the thinking and speaking brain. In short, Tannor couldn't control his reaction because he was not aware that it was taking place.

Polyvagal Theory, originated and developed over the past 40 years by neuroscientist Stephen Porges (2011), describes brain processes essential to understanding and resolving Tannor's impasse. As we have seen in other chapters, Dr. Porges proposed that an instantaneous, automatic, and unconscious neurological assessment determines whether a given situation is safe or dangerous. The process, which Dr. Porges called *neuroception*, then immediately initiates changes in the autonomic nervous system to match the perceived needs of the moment. If the system detects safety, the ventral vagal social engagement system comes online, allowing us to relax, calm down, and prepare to engage with others. Perceived threat, on the other hand, triggers fight-or-flight activation of the sympathetic nervous system and prepares our bodies to run or attack.

Porges proposed that inescapable life-threat triggers dorsal vagal collapse, fainting or "death feigning," a survival mechanism, which appeared in early in vertebrate evolution (e.g., fish, amphibians, and reptiles), presumably to make the animal a less appealing target to predators (2011). *Partial* dorsal vagal shutdown responses, as in Tannor's case, can appear as immobility, emotional numbing, difficulty thinking, inability to put thoughts into words, and losing touch with one's surroundings, (i.e., dissociation; McKinnon et al., 2016). These three systems together are known as the *autonomic nervous system* (ANS).

Dr. Roberts could have told the boy, "Your brain has made an error. Those people aren't out to get you. You need them to survive." But Tannor saw Dr. Roberts as a threat. If Dr. Roberts tried to reason with him, Tannor would simply have kicked Dr. Roberts out of the room too. In order to save Tannor's life, Dr. Roberts needed to first reengage Tannor's ventral vagal system, the calm, connected, openhearted and open-minded state in which more thoughtful reflection could take place. It was not a matter of simply telling him it was safe. Dr. Roberts needed to send enough signals of safety to the boy's ANS that his brain concluded that things truly were safe now. Only then would Tannor be able to rationally consider whether to let the doctors examine him.

The Physiology of the Doctor–Patient Relationship

Much attention has been paid to the robust benefits of the physician–patient relationship and how to make it even stronger (Fortin, Dwamena, Frankel, & Smith, 2012). But, because we have only just started to look at the physician–patient relationship through the lens of Polyvagal Theory, neither Dr. Roberts nor the physicians that Tannor dismissed had been trained to consider the neurophysiology underlying the boy's refusal of help. They had not been trained to consider that a patient's neuroception automatically scans for cues of safety and danger. They had not been trained to consider that a patient's abilities can vastly differ in states of ventral vagal social engagement, sympathetic fight-or-flight, and dorsal vagal shutdown. Finally, the doctors had not been trained to consider the neurobiological rationale for reversing the patient's shutdown and reviving awareness, connection, and initiative.

In short, these physicians had polyvagal blindness.

I met Dr. Roberts just as I began writing this chapter. Our conversation about his work with children who had cancer revealed his natural ability to address patients' sense of safety and move them into a ventral vagal state. But he knew little of Polyvagal Theory and its application to a physician's interpersonal work with patients and their families. He agreed to allow me to interview him and explain Polyvagal Theory as we went along.

Even though when he saw Tannor, Dr. Roberts could not yet use Polyvagal Theory as a tool of understanding, predicting, and problem solving, he did know how to proceed effectively. In his years of pediatric oncology practice, he had met with thousands of children and their parents. All were shocked to receive a cancer diagnosis and terrified that the malignancy would kill the child. Dr. Roberts listened to these families to understand their experiences and be of genuine help. Over time, he developed a philosophy and approach that he and his patients found valuable. He described it to me this way:

Treat patients with respect, dignity and honesty. Give them facts; let them know what's happening to them. Create an open relationship where they can talk about cancer and death. Keep balancing realism and optimism. Give them a chance to be cured and have a happy life. Establish a profoundly human partnership to ease the burden of knowing that this is a kid that could die. (personal communication, 2015)

Dr. Roberts was describing the calm and engaged ventral vagal state without knowing it. The ventral vagal state establishes the neurophysiological foundation for a vital human relationship: the tender and heroic partnership between patients and their physicians as they navigate the rough waters of illness, injury, and death. When these storms of life are interpreted as threats, they rally the sympathetic nervous system to fight or flee or even cause dorsal vagal shutdown. Shutdown is where Dr. Roberts found Tannor.

Several years ago, I got real-life experience in how Polyvagal Theory plays out from the patient's perspective. I was diagnosed with a very aggressive lymphoma that threatened to end my life much too soon. Now and then, my nervous system abruptly swung into high gear, and an "emotional hijacking" (Goleman, 2005) swept me along in the turmoil. Test results were potential death sentences. I was afraid I would not enjoy this lifetime, with my wife, AnnMarie, and our children, that we had imagined. Sometimes, when the worries got the best of me, the fear was physical—chest tightening, heart pounding, and sweating. Because I had already begun studying Polyvagal Theory, I kept one interested eye on what was happening in my brain, even while my other eye was fixed on survival.

Patients and Physicians: A Duet of Fear

Patients experience any number of threats when seeking medical care. Colleen Sweeney, who has surveyed patients extensively about their fears, reported that they worry about the severity of their condition, the pain that a procedure might cause, inability to pay their medical bills, or humiliation for failing to follow their treatment plan (Sweeney, in press). They fear that they will not be able to adequately communicate their needs, that there will be a mix-up in their procedures, or that the people caring for them are not competent. So when patients arrive at the clinic or in the emergency room, they are often in a state of vulnerability (Elmqvist, Fridlund, & Ekebergh, 2012), their nervous systems activated to defend against the threats they fear.

Ultimately, a person is either open or defensive (Baylin & Hughes, 2016). In ventral vagal engagement, people open up to each other. In sympathetic

arousal and dorsal vagal shutdown, people are defensive. Defensive people make others uneasy.

Physicians, striving to remain open, must recognize and negotiate their own internal danger signals. In preparation for writing this chapter, I asked physicians about the threats *they* face in their work with patients. One physician, whom I'll call Dr. M, said that not knowing the diagnosis or how to answer a question threatens her, as does attempting a difficult intubation without backup. In these situations, she feels agitated, annoyed, even a little angry. She can feel it in her heart and hands. Her thought processes don't move like she wants them to—she feels thick headed. Even though she might not know what to do or how to do it, she has multiple backup plans.

Another physician I'll call Dr. C also told me that he feels threatened when there is a rapidly changing and confusing clinical picture that he is not able to diagnose. He also feels vulnerable when he is not able to reach his patient and form an alliance, as he feels he should. About these situations, he said, "It's like you are walking through mud. I don't want to walk into that room. It's almost twice as hard—dealing with the situation and the mud."

Several physicians talked about the effect of nurses' neurophysiology on the team. Dr. C said, "The other night we had a patient who was tanking. We had to intubate, use pressors, all the things you learn to do. If we have nurses who are calm, who know how to handle the problems, that makes all the difference. An anxious nurse makes you put attention on them rather than the patient." Marilyn Sanders, neonatologist and author of Chapter 20 in this book, said, "During what I call my worst day, with a baby dying and the room in chaos, a senior nurse looked me in the eyes, and very steadily said, 'What do you need me to do?' She gave me her steely determination." Dr. Sanders's husband Peter added, "That's when you became confident that you could be confident."

When I asked Dr. Roberts his reaction to Tannor's situation, he described a different reaction: "There's a calm that comes over you—you think, 'I'll panic later. It's time to go in there and be effective. Failure could mean death of a child.'" Dr. Sanders, who understands Polyvagal Theory, said, "For me, I have to allow the vagal brake to come off, to allow the energy to come to handle the crisis." She needs to relax her ventral vagal activation just a bit to unleash enough sympathetic activity to meet the challenges she faces.

Doctors told me that threats come from outside the doctor–patient relationship as well. Insurance companies deny payment for needed medical services. Government inspectors enforce burdensome regulations. Administrative glitches impede positive action. And there are always legal hazards lurking—medical malpractice, HIPAA violations, and so on. One physician told me,

Lawsuits don't bother me much. But things that are so unrelated to my clinical duties, like an administrator telling me to discharge a patient from the hospital in the next 48 hours when they need another week or two—that gets me sympathetically activated. I have to work really hard to stay regulated, and the nurses protect me some. But I may have to go from that situation, talk with a family whose loved one is dying, then run a code. You may get a few minutes to grieve a loss. And sometimes not. Things cluster and the beeper goes off. (personal communication, 2015)

Given the multiple threats facing both physicians and patients, and the built-in tendency of neuroception to mobilize protective measures when it detects danger, it is a minor miracle that a patient ever shows up to a clinic to ask for help at all—and that a physician is there to offer it.

Facing a Dilemma

When I interviewed Dr. Roberts, I had been teaching doctor–patient communication to medical students and psychiatric residents for more than 20 years. My goal in teaching was to support students to be fully present with their patients, attending to their needs. I wanted to empower students to express the compassion that had inspired most of them to go into the medical profession in the first place, which medical education and practice could grind down and even destroy (Dyrbye & Shanafelt, 2016). I also wanted to introduce my students to the powerful working partnership that I knew physicians and patients could develop, and the joy that such partnerships could bring, even, or especially, in the face of sickness.

Some of my students dove into the learning. They had gone into medicine intending to offer compassionate care to patients. Many had been to doctor visits with their loved ones—a grandmother with Alzheimer's, a brother with heart disease, a parent who had died. In most cases, the physicians of these students' family members had been humane, caring, and sensitive, as well as skilled in diagnosis and medical intervention. The students had also seen what happened when insensitive doctors had ignored the human aspects of their family's situation. They winced at the demoralizing effects such ignorance had had on their loved ones' spirits. In my view, these kinds of students were humanists.

Another group of students had gone into medicine with a completely different—and no less valuable—set of interests and aspirations. These were the scientists. They loved reading about the discoveries made in labs and clinics of years past. They relished the great intellectual mysteries and the elegant

ways that medical insights were coaxed from the depths of the unknown. But, because they were focused on the physical world of the body and biology, the course often made little sense to them. They asked, "Why do I need a course in talking? I have been talking since I was two!" They had not yet discovered the inner, experiential world of hopes and fears, beliefs, feelings, stories, and faith. How could I awaken them to the magic of the human?

Building Bonds of Attachment

The answer to my question came from an unexpected direction. Several years ago at KidsTLC, Inc., the Kansas City–area behavioral health agency where I work as a child psychiatrist, my colleagues and I came to the realization that many of the children we worked with had suffered early abuse, trauma, neglect, and abandonment, adverse experiences known to cause what Bessel van der Kolk and his colleagues call *developmental trauma disorder* (2005). Dr. van der Kolk says that psychologically harmful experiences disrupt the child's normal process of acquiring fundamental capacities: for example, the capacity to form stable, trusting relationships; to allow caregivers to help regulate their intense emotional states; and to make sense of experiences in coherent, understandable ways. Although we succeeded in helping a number of these children, there were others whom we could not find a way to reach.

We learned that psychologist Dan Hughes had created an approach, called Dyadic Developmental Psychotherapy (DDP), that effectively addresses these children's underlying issues (2006). Because abused children have understandably concluded that adults are not trustworthy, the goal of DDP is to help these children learn to trust the good foster and adoptive parents who are raising them now. KidsTLC invited Dr. Hughes to train us in this approach.

Dr. Hughes introduced us to Polyvagal Theory. Although aware of fight-or-flight and shutdown, we had never learned about ventral vagal responses and the signals of safety that elicit them. Like Tannor's doctors, we were missing the polyvagal perspective that was critical to helping our patients heal. We too had polyvagal blindness.

Dr. Hughes taught us to be playful, accepting, curious, and empathic, a deportment known by the acronym PACE (2006). The PACE attitude actively signals to the child's nervous system that the adult is safe, moving the child into a ventral vagal, socially engaged relationship. When adult and child are both in ventral vagal social engagement, we clinicians can help the child build trusting relationships, learn new social skills, and process trauma. Likewise, we can teach direct-care staff and parents to become what we at KidsTLC call a *competent companion*, a person who stays ventral vagal while accompanying

someone through life's trials and tribulations with compassion and expertise (Thompson & Mock, 2016).

Teaching the Interpersonal Neurobiology of the Doctor–Patient Relationship

Many days I drove from KidsTLC to teach medical students in the CUES (communication, understanding, education, and self-assessment) to Medical Communications course at the University of Missouri–Kansas City (UMKC) School of Medicine. My emerging learnings traveled with me. I saw that Polyvagal Theory could be applied not only to the parent–child relationship but to the doctor–patient relationship as well. In fact, Dr. Sue Carter, the behavioral neurobiologist who first identified the physiological mechanisms responsible for social monogamy, says that the mother–child interaction is the prototype for all nurturing relationships (2014).

It occurred to me that I could reach those science-oriented students by presenting polyvagal neurophysiology as an understandable rationale for exploring medical communication skills. Experience had shown me that if I could get students to try these communications strategies with their patients in clinic, their patients' positive feedback would provide more and more reasons for them to keep developing these skills. The good results they produced would stoke a self-rewarding cycle: Success with patients would motivate more communication skills practice, leading to further success with patients.

My heart stirred with a growing recognition that this work was part of my life purpose: to awaken people to the power and grace and interconnectedness that arises from wholeheartedly embracing our humanity.

I envisioned training science-focused students to be competent companions, able to attend compassionately and faithfully to patients and their families, while understanding their biology as well. Their patients would feel well cared for, both medically and emotionally. And students would awaken to the uplifting feelings of satisfaction that come from caring for the whole person, as a whole person.

Soothing Tannor's Brain

Dr. Roberts continued telling me what happened with Tannor.

I sat in the chair at the foot of Tannor's bed for 15 minutes before anyone said anything. I was in a heightened state of awareness, watching for cues about what was happening. He was sick; he was in pain. I had decided that I

was not the one to talk first. Eventually Tannor demanded, "So, why are you here?" I simply told him, "I am the on-call doctor," and then returned to a friendly and calm silence. Another 15 minutes went by before Tannor asked a bit more quietly, "Well, what are you going to do?" I said, "I am not going to do anything without your permission." (personal communication, 2015)

Dr. Roberts explained that more minutes passed, but not as many as before, then:

Tannor asked, with some measure of curiosity, "So, what is it that you want to do?" Still in my chair, I said, "I am concerned that you have an infection in your appendix that is making you feel so bad. I want to find out exactly what's going on." Tannor asked me, "What will that take?" I explained that I needed to listen to his belly with a stethoscope. I needed to press on his belly too, and he could tell me to stop if it hurt. I promised to tell him everything I was learning, every step of the way. He agreed to let me examine him. Then his mother dropped her guard as well. (personal communication, 2015)

When Dr. Roberts finished the story, I described Polyvagal Theory to him, clarifying that Tannor's shutdown was a dorsal vagal response and his mother was experiencing sympathetic mobilization to defend her son. Dr. Roberts's behavior sent signals of safety to Tannor's brain. As the boy's neuroception slowly accepted these signals, indicating that danger was receding and that the environment was becoming safe, he was able to generate new responses that were appropriate to a safe context. The brain could tell other organs: *Calm down. No need for alarm. Danger has passed. Let Dr. Roberts approach. He represents no threat. Listen to what he is saying.*

We talked about Tannor's mother. She was keenly attuned to Tannor's frozen panic. Only when her polyvagal neuroception determined that Tannor was not defending himself from danger did it conclude that the situation was becoming safe. That's when she relaxed too.

When Tannor's and his mother's nervous systems moved from sympathetic fight-or-flight into ventral vagal, the shift activated a number of physiological responses that Porges (2011) describes: Heart rate, blood pressure, and breathing were normalizing. Pupils were constricting, not needing so much light. The eardrums were tuning to the human voice rather than to lower-pitched frequencies associated with predators and dangers (think a growl or low roar of an earthquake or landslide). Facial muscles were looser and more animated. Musicality was returning to their speech. The mother's and boy's

neurophysiologies were now preparing them to work as productive, trusting partners with Dr. Roberts.

Thinking With Polyvagal Theory

I have taught in the CUES to Medical Communications course since 2002. We always start the course by teaching nonverbal communication skills, which are the very skills that Dr. Roberts instinctively employed with Tannor. They include putting the patient at ease by placing oneself in nonthreatening positions and stances, and using tone of voice and facial expressions that telegraph safety.

When we teach students Polyvagal Theory, they realize that their own calming nonverbal communication conveys a neurobiologically effective sense of safety and connection to the patient. We teach them to "think with the theory" (Schon, 1983) by observing whether their interventions help their patients let go and open up as they'd predicted. With polyvagal awareness, the students begin to better understand how to "translate" various patient behaviors. The "fight" response often looks like an angry or resistant patient. The "flight" response often looks like submissive acquiescence without follow-through.

The act of understanding brain function can generate a fuller comprehension of human experience as well. One student, noticing nonverbal signs of fearfulness, discovered that his patient heard gunshots in her apartment complex day and night. She had been enduring a life-threatening situation and the physiological panic responses that went with it. Given what my student had learned about Polyvagal Theory and fear, he could put himself squarely into her physiological and emotional shoes.

Equally, as human experience is illuminated, our understanding of brain function deepens too (Hughes, 2012). For example, that same student, empathizing with the experience of his patient's chronic stress, developed a vivid grasp of what happens in the brain of a person who is relentlessly confined to a dangerous situation.

Patients experience states of alarm in non-life-threatening situations as well. While undergoing chemotherapy, I recognized a fear of needles that I had simply endured. Each time my blood was to be drawn, I got anxious and my chest tightened, even though I told myself that the needles wouldn't injure me or hurt very much. One study found that 22% of patients had a fear of needles, and over half of those had sympathetic symptoms (dry mouth, sweating, and shortness of breath) or dorsal vagal symptoms (feeling nauseated, faint, and dizzy) (Wright, Yelland, Heathcote, Ng, & Wright, 2009). The study authors point out that, because each year globally people get around 12 billion injections, the cumulative impact of this fear is enormous.

Letting the Patient Lead

As it turned out, the textbook we chose for the CUES to Medical Communications course presented an approach to the doctor–patient relationship that implicitly addressed polyvagal concerns, though we had not heard of Polyvagal Theory at that point. The approach and the text, both called Patient-Centered Interviewing, began by asking the patient what concerns brought her to clinic—both medical symptoms and how they affect her life (Fortin et al., 2012). They encouraged the physician to look for the emotions that the situation has stirred up and to use empathy skills to help manage these emotions. Although the text did not explicitly conceptualize the empathy skills as addressing the patient's polyvagal state, in my experience, using this approach sends calming signals of safety. The stage is now set for physician and patient to work together to clarify threats to health, diagnose the medical and psychosocial issues, and make a plan to address the situation.

The patient-centered portion of the interview demonstrates to patients that the physician is interested in them as a whole person, both in their symptoms and in the personal and emotional impact that the symptoms have had. This approach is patient centered because *the physician follows where the patient leads*. Dr. Roberts, in allowing Tannor to be in charge, was patient centered. In physician-centered interviewing, *the physician leads and the patient follows*—into questions about past medical history, family medical history, social factors, and a general review of symptoms. After patient-centered interviewing, the patient is ready to turn control over to the physician because the physician has demonstrated that she is prioritizing the patient's needs and experiences, and is therefore worthy of the patient's trust. In practice, control of the interaction may switch back and forth between patient and physician many times during a visit, in a process that Dr. Hughes calls "follow-lead-follow" (Baylin & Hughes, 2016, p.168).

After the interview comes the physical exam. Abraham Verghese, a noted proponent of a collaborative doctor–patient relationship, pointed out that the exam can be experienced as dangerous, because it may involve disrobing as well as touch (Verghese, Brady, Costanzo Kapur, & Horwitz, 2011). But, he said, the exam is not only a potential threat; it is an opportunity to increase safety. Dr. Verghese believes that "when a sick patient is examined with skill, it goes a long way in earning trust and authority. It may affirm the personal commitment between doctor and patient at a deeper level—the unspoken, 'I will always be with you. I will not let you suffer'"(p. 552). The depth of this commitment sends a powerful signal that the physician is dedicated to supporting the patient's well-being.

Even after patient-centered interviewing induces a patient to feel calmly connected to his doctor, a sense of danger can reawaken, for example, if his physician touches a painful body part, or asks a question that inadvertently touches a sensitive subject. Consequently, we teach students to observe the patient's facial expression and tone of voice for nonverbal cues of upset, because they are readable and reliable indicators of a person's autonomic state (Porges, 2015a). Addressing how the patient is feeling in that moment and sending signals of safety prepares the patient for a return to clinical questioning. Again, this is the "follow-lead-follow" strategy that Dr. Hughes encouraged.

Caroline Dawson, my partner in the CUES course, teaches students a lovely way to empathically inquire about these shifts in patient's experiential reality by asking, in effect, "What happened that *that* happened?" For example, "I noticed that when I asked about your family history of heart disease, the expression of your face changed, and you started looking at the floor. What was going on for you when I asked that?" This refocusing on patient experience again sends signals of safety to the patient's autonomic nervous system, especially when accompanied by calming facial expressions and vocal intonations on the part of the physician.

When I asked Dr. Roberts to reflect some more on what happened with Tannor, he said, "I knew that two doctors had been thrown out of the room. So obviously my first goal was, 'Don't get thrown out.' In my mind I could see Tannor and his mother in a World War I foxhole. They had tense posturing." That made him think, "If I am overly active, I will be shot at." He went on, "I made a quick calculation. I sat below the physical level of the patient." Then Dr. Roberts realized a key factor. "Sitting down broke the dynamic. Tannor felt that others were trying to control him. By sitting down, I showed him that I wasn't going to dominate. With me, Tannor had control over the situation."

Relationship as Medicine

Dr. Roberts's ventral vagal social engagement system saved Tannor's life. This dramatic statement is true for two reasons. First, Dr. Roberts's ventral vagal state supported Tannor to relax and reflect. It was as if a scene from an old war movie played out, as the sentry of Tannor's neuroception demanded: "Hark, who goes there! Friend or foe?" Dr. Roberts, in the role of the approaching soldier, had to give the designated nonverbal countersign to demonstrate that he was a friend. As Tannor's neuroception received these nonverbal signals, the boy's autonomic nervous system grasped that there was safety in the midst of danger. It lowered its defenses and prepared for collaboration.

Second, because Dr. Roberts's mind was open and clear, he could see that Tannor was a desperate boy, clinging to his very life. The physician could free-associate; he could see solutions. Dr. Porges said, "Safe states are a prerequisite not only for optimal social behaviour, but also for accessing the higher brain structures that enable humans to be creative and generative" (2015a, p.115). The safe state of Dr. Roberts's own autonomic nervous system gave him the interior freedom to find an approach that would help Tannor.

Surgeon Glenn Talboy tells CUES students that emergency situations demand a particularly advanced level of communication skill. In surgical emergencies, he must connect quickly with the patient and family, help to calm them as much as possible, and provide the necessary information clearly, succinctly, and compassionately. Complicating the situation, the more threatening the medical situation, the more fearful and shut down the patient typically is.

In the emergency situation, neither Dr. Talboy nor Dr. Roberts has the luxury of long months to get to establish trust with his patient, as does a primary care physician treating a patient with a chronic condition. Yet in Tannor's emergency, Dr. Roberts took the time to help the boy move into a ventral vagal state. In its way, it was as important a step as taking the time to induce anesthesia before operating. The good cognitive functioning Dr. Roberts fostered is crucial when a life is in jeopardy.

Physicians don't always have even the little time that Dr. Roberts took to connect with Tannor. When the medical needs of the situation demand immediate action—for example, when an unconscious patient has life-threatening bleeding—ethics, regulations, and laws allow intervention without the patient's consent. These necessary violations of the patient's right to decide can cause ruptures in her sense of safety and trust. After the crisis, the physician can seek to repair any break in the relationship by asking the patient about her experience of having decisions made on her behalf, listening compassionately, and making apologies when appropriate.

Today, we teach medical students not only to observe their patients' non-verbal cues, but also to be aware of their own autonomic state. Dr. Hughes said that whenever two people relate to each other from different polyvagal states, whoever stays in his own state the longest will bring the other into that state (2012). If the physician stays calm and engaged long enough, the patient will usually move from fight-or-flight (or shutdown) into the social engagement system as well. This is neurophysiological leadership—and relationship as medicine. Dr. Jon Baylin, Dr. Hughes's coauthor of *The Neurobiology of Attachment-Focused Therapy* (2016), highlighted the importance of being able to shift to more adaptive states by cleverly observing, "It is all about Interstate travel!" (J. Baylin, personal communication, November 2, 2016).

Bringing patients into ventral vagal has another benefit. As Porges put it, the nondefensive ventral vagal state “provides neural opportunities for us to learn and to form strong social bonds while simultaneously supporting health, growth and restoration” (2015a, p. 115). Not only does ventral vagal allow one to think and collaborate, it also benefits the body at a physiological level as well.

Aequanimitas Means “Composure”

A physician who is in fight-or-flight activation is concerned primarily with his own survival and protection. He may be inconsiderate and abrasive, or even desperate and reckless. He cannot regulate his autonomic nervous system, and his emotions will be dysregulated as well. He may yell at a patient, throw a clipboard at a nurse, or leave the room in a huff.

Dr. Louise Arnold, my mentor at UMKC, has used her long and distinguished career to study the nature of medical professionalism and how to advance it. Along with NYU professor of internal medicine David Stern, she described professionalism as including four necessary *aspirational* principles: excellence, humanism, accountability, and altruism. Drs. Arnold and Stern also described three *foundational* elements of professionalism: clinical competence, ethical understanding, and communication. The foundational elements comprise the attitudes, knowledge, and skills required to enact the aspirational principles. Drs. Arnold and Stern depicted this definition of medical professionalism as the steps and columns of a Greek temple. The three foundational elements are the steps of the temple, and the four aspirational principles are columns rising from steps (2006).

From a polyvagal perspective, medical professionalism requires the ability to maintain and regain a ventral vagal state no matter how threatening the circumstances. As Dr. Arnold and I have observed before (Arnold & Thompson, 2010):

The value of professionalism is most visible when the stakes are high, information is incomplete, and no predictable solution to the situation exists . . . (Patterson, Grenny, McMillan, Switzler, & Covey, 2002). These circumstances can be associated with harmful reactions and emotions and unhelpful thought patterns that diminish one’s ability to act professionally.

Ventral vagal social engagement enables the physician to maintain critical cognitive faculties (excellence), facilitate the emotional and neurologic well-being of the patient (humanism), and remain open and engaged when instinct

prompts running, fighting, or hiding responses (altruism). Adequate ability to override more evolutionarily primitive reflexes in favor of an open and engaged outlook demands self-initiative and self-development (accountability).

Because the autonomic and emotional regulation found in ventral vagal social engagement appears necessary to deploying these aspirational virtues, we propose adding the ability to maintain and regain the ventral vagal as an additional foundational element, a fourth step of Drs. Arnold and Stern's Greek temple of professionalism.

In his valedictory address to the University of Pennsylvania School of Medicine graduates in May 1889, William Osler (n.d.) exhorted new physicians to develop a warmly genuine and autonomically regulated composure:

Cultivate, then, gentlemen, such a judicious measure of obtuseness as will enable you to meet the exigencies of practice with firmness and courage, without, at the same time, hardening "the human heart by which we live" [cf. Wordsworth, 1807; reference not in the original]. . . . Hence the need of an infinite patience and of an ever-tender charity toward these fellow-creatures.

Though in 1889, Dr. Osler could not have been familiar with the term *ventral vagal*, he was nonetheless describing just that—the nonreactive, openhearted, caring and concerned, body-mind state of a competent social engagement system.

Physician, Heal Thyself

How do we physicians develop such composure ourselves? Dr. Arnold and I have spent numerous hours talking about how to help students develop professional virtues. Only partly in jest, we dreamed aloud of a medical training that was part lab, part clinic, and part monastery, where character is developed along with mental alacrity and physical dexterity.

Dr. Porges maintains that one can enter the ventral vagal through the doorways of meditation and religious practice (2014). For example, Dr. Ronald Epstein, a physician who studies how to improve communication between clinicians, patients, and their families, proposed that practicing mindfulness increases a physician's ability to maintain reflectiveness even in emotionally stressful situations (1999). He says that the goal of mindfulness practice for physicians is the ability to join in "compassionate informed action in the world, to use a wide array of data, make correct decisions, understand the patient, and relieve suffering" (1999, p. 838).

Over the past 15 years, my own self-development practice has been to

start the day with exercises from Harry Palmer's Avatar® Course (Palmer, 2011; Palmer, 2012). Avatar teaches people to live deliberately by acting with purposeful determination, controlling attention skillfully, replacing self-denigrating beliefs with self-empowering perspectives, and relating to others with compassion, tolerance, and understanding. My personal objective in practicing the exercises has been to increase my sense of calmness, connection, and self-efficacy. This practice has likely had a neurophysiological effect of increasing my ability to be in a ventral vagal state.

Another result of practicing Avatar exercises is the development of what Palmer calls the witness viewpoint, "a quiet viewpoint that can watch consciousness" (2007). Jon Kabat-Zinn, who has studied and taught mindfulness meditation to patients and physicians alike, instructs us that "assuming the stance of an impartial witness" (2009, pp. 33–34) enables us to step back from our judgments and fearful reactions, while providing relief from stress as well.

I believe the witness viewpoint to be firmly centered in the social engagement system, providing a place of awareness from which to experience biology happening. It can observe while safely allowing adrenaline to pump, the heart to race, and muscles to tremble. For example, in a moment when large clumps of my hair were falling out due to chemotherapy, and with AnnMarie as support, I used an Avatar exercise to let wave after wave of visceral revulsion flow through me and be released. As Mr. Palmer said, the witness viewpoint is "sufficiently disengaged from your own consciousness that you can even watch emotion without becoming agitated" (2007).

A half hour later, I went to the Downtown Barbershop, where a man I'd never met before cut off what hair of mine remained. Learning of my situation, Jay told me I owed him nothing. He said, "You can pay me when your hair grows back!" I felt such loving companionship in those words. Jay touched my heart and moved me to tears. I was experiencing the emotion of elevation, a warm and open feeling in the chest that makes you want to be around people and become a better person (Haidt, 2003). Elevation theory postulates that vagal pathways play a role in this emotion. And the compassion Jay was most likely experiencing, in response to my suffering, may have its own connections to the vagus as well (Stellar, Cohen, Oveis, & Keltner, 2015). As I discovered so poignantly that day, the ventral vagal state may be filled with tenderness and blessings that transcend our ability to describe (D. Dana, personal communication, August 21, 2016).

I have not spoken much professionally of my self-development practice and the states of grace I have experienced. I feel a flush of embarrassment as I write about it even now, as I sense taboos against talking about intimate experiences in the presence of colleagues. But how will we physicians recognize the bene-

fits of self-development if we don't speak of it with each other? Knowing what we now know about the positive impact of calm ventral vagal connectedness on the doctor–patient relationship, we cannot afford to remain silent about our own experiences any longer.

Accordingly, I teach medical students the Avatar Compassion Exercise (Palmer, 2008; also cf. www.theavatarcourse.com/compassion), which involves placing one's attention on another individual and then contemplating five statements, such as, "Just like me, this person is seeking some happiness for his/her life." "Just like me" is the most vital part of this practice, for it acknowledges that both you and another person seek these goals, and helps you to feel an authentic connection with him or her. The students who do the exercise say they feel calmer, more present, and more empathic toward the person they were considering. Some say that the exercise is their favorite part of the course. They carry a small card with the compassion instructions in their white coat pockets, pulling it out when they need a calmer and broader perspective.

The Physician as Patient

Experiencing illness personally can expand a physician's perspective as well. My first symptoms of lymphoma appeared in December 2012. My belly had swollen, and I was sweating day and night. My primary care physician, Loree Cordova, made time to see me during her lunch break. She examined me thoroughly and encouraged me to get a CT scan. In a state of dorsal vagal shut-down, I refused. Her help felt threatening, as I confused her efforts to diagnose my condition with the danger that the diagnosis itself represented. She did blood tests to get further information and to keep me engaged. Later that day she called with the lab results, which were inconclusive, but she continued to talk to me until she found a way to get through. She wondered how I was going to go on a family trip that weekend, not knowing the cause of my swollen belly? Her calm insistence in offering help, staying connected, and encouraging the scan, despite my efforts to push her away, enabled me to take action.

Three hours later I lay on a gurney, AnnMarie by my side, in the radiology department of the community hospital where I do occasional psychiatric consultations. Dr. Cordova came in to give my wife and me the news. The scan showed that I had more than 20 masses throughout my abdomen, including a 2 × 4 in. mass in my small intestine, right where it joins the colon.

Dr. Cordova didn't know what the masses were, but she had spent the previous half hour arranging a colonoscopy for the next morning to biopsy the largest one. Scheduling the colonoscopy was part of her philosophy of always giving patients a "next step" to evaluate or treat their symptoms or illness. The

next step, after the colonoscopy, was an appointment with an oncologist. And so the next steps continued, all the way through chemotherapy and recovery. Dr. Cordova's consistent concern, thoughtfulness, and deliberate action plan conveyed the same message that Dr. Verghese attributed to skillful physical exam: "I will always be with you. I will not let you suffer." Her promise of presence was a compelling and potent hallmark of safety that moved me out of the dorsal vagal and into action.

After my fourth round of chemotherapy, I awoke in the middle of the night with nausea, vomiting, and a fever of 102.9 degrees. My oncologist had given me a card instructing my local doctors, if I got a fever, to look for infection and start antibiotics immediately afterward. For me, like Tannor, infection in that situation could be fatal. So I woke AnnMarie, looked for the card, and started to panic when I couldn't find it. "We need to get to the hospital," my wife said urgently. "Let's go!" Angrily, I refused to get in the car. She insisted. I refused again. I could hear her telling our neighbor what the oncologist had told her: "Do whatever you need to get him in the car. Pick him up and carry him. Call an ambulance if necessary." After what seemed like eons, I found the card and got in the car. AnnMarie made the two-minute drive to the hospital.

A few weeks later, AnnMarie and I were still blaming each other for almost killing me. We took some quiet minutes to connect and talk about what had happened from each of our perspectives. Listening to each other with care, my wife and I moved back into ventral vagal compassion and companionship. We realized that both of us had been trying to keep me alive, but our brains had shut down. This situation gave the physician and medical educator in me much more empathy for patients. Who knows what states of alarm and shut-down people have suffered in the process of getting themselves to the doctor!

Trusting Collaboration in the Ventral Vagal

Tannor, AnnMarie, and I had all experienced a state of alarm that prioritized defense and prevented us from communicating. Dr. Porges has proposed that the key factor in calming our alarm and preparing us to engage and collaborate is the ventral vagal state (2015a). Calmness allows us to approach each other in peace. This is the neurobiology of safe working relationships.

Safe partnership has benefits beyond what working together achieves. Drs. Lane Beckes and James Coan, cognitive and affective neuroscientists, posit that human brains operate more efficiently and effectively in collaboration with each other (2011). When people work together, their brains use less energy than when they work alone. Aligned with Polyvagal Theory, Drs. Beckes and Coan observe that signals of safety allow transition to this collaborative mode. They cite a remarkable experiment (Schnall, Harber, Stefanucci,

& Proffitt, 2008) in which standing next to a friend makes a hill look less steep than when one views the hill alone. And *the longer the friendship, the less steep the hill appears*. What an extraordinary metaphor for how companionship influences our outlook on the challenges of life.

Dr. Peter Fonagy is a psychoanalyst who is advancing our understanding of what creates secure and trusting relationships. Along with fellow psychoanalyst Dr. Liz Allison (2014), he wrote that humans' ability to form trusting relationships develops during childhood, when parents repeatedly recognize and understand that their children have their own experiences and intentions. Drs. Fonagy and Allison proposed that, even when adults did not experience such understanding in childhood, they may still learn to trust later in life—for example, when they feel that an empathetic therapist repeatedly grasps their subjective experience. In describing these phenomena, Drs. Fonagy and Allison highlighted the nature and characteristics of epistemic trust, which is “an individual's willingness to consider new knowledge from another person as trustworthy, generalizable, and relevant to the self” (2014, p. 373).

We see here other benefits of patient-centered interviewing: understanding the patient's perspective and experiences promotes epistemic trust, a sense of safe interaction and the brain efficiencies of collaboration.

The Neurobiology of Peace

Stepping back from what Polyvagal Theory has taught us in this chapter, we may glimpse even larger lessons about the world and our place in it. Years ago, I saw a 10-year-old boy who had been abused by his family, then moved from one foster home to another. I am not sure today what brought him to my clinic, but one fragment of his visit stands out clearly. After we had talked for a bit, he took a deep breath and asked sincerely why he had been treated so badly, why no family would have him, and why he had to suffer so. I deliberated before speaking, feeling what was in my heart, knowing the magnitude of the moment. After what seemed like an eternity, I took my own deep breath and told him with equal sincerity that I did not know why he had to endure so much when he was yet a boy. Truly I had no answers.

He looked more deeply into my eyes—I can still see him today—held that gaze for another long moment, then let go and relaxed. Why? Maybe I had passed a test. Maybe my inability to make sense of his situation led him, in Dr. Dan Siegel's words, to “feel felt” (2010). Or maybe he moved into that impartial witness consciousness that could, with equanimity, allow the reasons for his life's tragedies to remain a mystery.

Whatever it was that happened, I experienced a palpable feeling of connection that goes beyond description. Something vital awakened in both

patient and physician, something mighty, rejuvenating, and life-affirming. It was sublime.

Spiritual practices are, according to Dr. Porges, "doorways to the ventral vagal" (2014). Perhaps the ventral vagal is a doorway to our experience of the divine as well. In *The Doubter's Guide to God* (2016), my friend Roger Martin beautifully described the joining of souls he has experienced in his own spiritual journey, along with echoes of the sanctuary to be found in ventral vagal. He observed:

The soul knows that life within the house of the body could be less tumultuous. It longs for us to find ease. It would have us bring forward our best, evince humility and gentleness, forthrightness and integrity, calm and patience. It mourns the deformation of love, as love twists into cruel words and deeds that betray our original tenderness and vulnerability. The soul is the angel in us waiting to meet the angel in another, so that these angels, like drops of mercury, can rejoin. (p. 214)

We live in a world that can be tumultuous and cruel. A relentless parade of danger signals pervades daily life, Porges warns, signals that notify us, in effect, that threat looms ever present (2015a). He says that institutions, not understanding our "biobehavioral need for safety," often do little to promote the kind of warm, face-to-face connection that could mitigate this generalized neuroception of danger. In the face of disconnected menace, humanity as a whole is pressured to fight or flee, rather than to cooperate in the mutual understanding of epistemic trust.

Many people today are bucking this cultural current of danger, which hurries us toward fear and disengagement, by creating and participating in activities designed to foster a more harmoniously connected world. As we have seen in this chapter, these efforts include research, education, and training in how to create safe, collaborative, and life-affirming relationships.

When Dr. Arnold and I were preparing a chapter on medical professionalism, we realized that the doctor–patient relationship "provides a world-wide model for reducing intolerance, cruelty, and violence and expressing a humanism that encompasses all of us" (Arnold & Thompson, 2010, p. 18). Now we see that physicians, practicing medical professionalism, enter the ventral vagal state to help their patients become open and engaged. Face-to-face physician–patient meetings, which likely number in the millions each day around the world, have the potential to create ever-widening circles of ventral vagal signals of safety. If enough people stay in the social engagement system for a long enough time, that accord is likely to spread to larger and larger groups.

From the perspective of Polyvagal Theory, physicians can play a crucial role in creating a widespread neurologic shift that will—we hope—usher in peace on the planet.

References

- Arnold, L., & Stern, D. T. (2006). What is medical professionalism? In D. T. Stern (Ed.), *Measuring medical professionalism* (pp. 15–37). Oxford, England: Oxford University Press.
- Arnold, L., & Thompson, G. S. (2010). Defining and nurturing professionalism. In J. Spandorfer, C. A. Pohl, S. L. Rattner, & T. J. Nasca (Eds.), *Professionalism in medicine: The case-based guide for medical students* (pp. 7–21). New York, NY: Cambridge University Press.
- Baylin, J., & Hughes, D. A. (2016). *Norton Series on Interpersonal Neurobiology. The neurobiology of attachment-focused therapy: Enhancing connection & trust in the treatment of children & adolescents*. New York, NY: Norton.
- Beckes, L., & Coan, J. A. (2011). Social baseline theory: The role of social proximity in emotion and economy of action. *Social and Personality Psychology Compass*, 5(12), 976–988. doi:10.1111/j.1751-9004.2011.00400.x
- Carter, S. (2014, November). The endocrinology of compassion and love: An oxytocin hypothesis. In S. Brown (Moderator), panel discussion at the CCARE Science of Compassion 2014: The Psychophysiology of Compassion conference, San Francisco, CA. Retrieved from <https://www.youtube.com/watch?v=VAL-MMYptQc>
- Dyrbye, L., & Shanafelt, T. (2016). A narrative review on burnout experienced by medical students and residents. *Medical Education*, 50(1), 132–149. doi:10.1111/medu.12927
- Elmqvist, C., Fridlund, B., & Ekebergh, M. (2012). On a hidden game board: The patient's first encounter with emergency care at the emergency department. *Journal of Clinical Nursing*, 24, 2609–2616. doi:10.1111/j.1365-2702.2011.03929.x
- Epstein, R. M. (1999). Mindful practice. *Journal of the American Medical Association*, 282(9), 833–839. Retrieved from <http://jamanetwork.com/pdfaccess.ashx?url=/data/journals/jama/4685>
- Fonagy, P., & Allison, E. (2014). The role of mentalizing and epistemic trust in the therapeutic relationship. *Psychotherapy*, 51(3), 372–380. doi:10.1037/a0036505
- Fortin, A. H., Dwamena, F. C., Frankel, R. M., & Smith, R. C. (2012). *Smith's patient-centered interviewing: An evidence-based method*. New York, NY: McGraw-Hill.
- Goleman, D. (2005). *Emotional Intelligence: Why it can matter more than IQ*. New York, NY: Bantam Books.
- Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 275–289). Washington, DC: American Psychological Association.
- Hughes, D. A. (2006). *Building the bonds of attachment: Awakening love in deeply troubled children* (2nd ed.). Lanham: Jason Aronson.
- Hughes, D. A. (2012, July). Dyadic developmental practice, psychotherapy, and parenting: Level 2. Training, Colby College, ME.
- Hughes, D. A. & Baylin, J. (2012). *Norton Series on Interpersonal Neurobiology. Brain-based parenting: The neuroscience of caregiving for healthy attachment*. New York, NY: Norton.
- Kabat-Zinn, J. (2009). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. New York, NY: Bantam Dell.
- Martin, R. P. (2016). *A doubter's guide to God*. Topeka, KS: Woodley Press.
- McKinnon, M. C., Boyd, J. E., Frewen, P. A., Lanius, U. F., Jetly, R., Richardson, J. D., & Lanius, R. A. (2016). A review of the relation between dissociation, memory, executive

functioning and social cognition in military members and civilians with neuropsychiatric conditions. *Neuropsychologia*, 90, 210–234. doi:10.1016/j.neuropsychologia.2016.07.017

Osler, W. (n.d.). *Aequanimitas* (3rd ed.). New York, NY: McGraw-Hill.

Palmer, H. (2007). *Source beingness* [Video talk]. Star's Edge International, Altamonte Springs, FL. Retrieved from <http://avatarepcmedia.com/Video/sourcebeingness.html>

Palmer, H. (2008). *ReSurfacing®: Techniques for exploring consciousness*. Altamonte Springs, FL: Star's Edge International.

Palmer, H. (2011). *The Avatar® path: The way we came*. Altamonte Springs, FL: Star's Edge International. Palmer, H. (2012). *Living deliberately: The discovery and development of Avatar®*. Altamonte Springs, FL: Star's Edge International.

Porges, S. W. (2011). *The Polyvagal Theory: Neurophysiological foundations of emotions, attachment, communication and self-regulation*. New York, NY: Norton.

Porges, S. W. (2014, November). Vagal pathways: Portals to compassion. In S. Brown (Moderator), panel discussion at the CCARE Science of Compassion 2014: The Psychophysiology of Compassion conference, San Francisco, CA. Retrieved from <https://www.youtube.com/watch?v=VAL-MMYptQc>

Porges, S. W. (2015a). Making the world safe for our children: Down-regulating defence and up-regulating social engagement to 'optimise' the human experience. *Children Australia*, 40(2), 114–123. doi:10.1017/cha.2015.12

Porges, S. W. (2015b). Play as neural exercise: Insights from the Polyvagal Theory. *The Power of Play for Mind Brain Health*, 3–7.

Schnall, S., Harber, K., Stefanucci, J., & Proffitt, D. R. (2008). Social support and the perception of geographical slant. *Journal of Experimental Social Psychology*, 44(5), 1246–1255. doi:10.1016/j.jesp.2008.04.011

Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Siegel, D. (2010). *Mindsight: Transform your brain with the new science of kindness*. New York, NY: Bantam Books.

Stellar, J. E., Cohen, A., Oveis, C., & Keltner, D. (2015). Affective and physiological responses to the suffering of others: Compassion and vagal activity. *Journal of Personality and Social Psychology*, 108(4), 572–585. doi:10.1037/pspi0000010

Sweeney, C. (2017). The patient empathy project: A study of patient fears. In D. L. Zimmerman & D. G. Osburn-Harrison (Eds.), *Person-focused healthcare management: A foundational guide for healthcare managers* (pp. 193–201). New York, NY: Springer.

Thompson, G., & Mock, B. (2016, November). *The competent companion: Dyadic developmental practice in psychiatric residential treatment and doctor-patient communication*. Presentation at DDP Study Days, sponsored by DDP Institute, Stony Point, NY.

van der Kolk, B. A. (2005). Developmental trauma disorder: Toward a rational diagnosis for children with complex trauma histories. *Psychiatric Annals*, 35(5), 401–408.

Vergheze, A., Brady, E., Costanzo Kapur, C., & Horwitz, R. I. (2011). The bedside evaluation: Ritual and reason. *Annals of Internal Medicine*, 155(8), 550–553. Retrieved from <http://annals.org/>

Wordsworth, W. (1807). Ode: Intimations of immortality from recollections of early childhood. In Wordsworth, W. *Poems, in two volumes*. Retrieved from <http://www.bartleby.com/101/536.html>

Wright, S., Yelland, M., Heathcote, K., Ng, S., & Wright, G. (2009). Fear of needles: Nature and prevalence in general practice. *Australian Family Physician*, 38(3), 172–176.

Avatar® is a registered trademark of Star's Edge, Inc.