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CHAPTER 10

Using the Positive Deviance approach to reduce hospital-acquired infections at the Veterans Administration Healthcare System in Pittsburgh[1]

Arvind Singhal and Karen Greiner[2]

SYNOPSIS

On the evening of May 16, 2006, Tanis Smith walked into the recreational room of the HJ Heinz III long-term care facility of VAPHS (Veterans Administration Pittsburgh Healthcare System[3]), mingling easily with the 34 male veterans who had gathered for the scheduled Bingo game. As she deftly handed out the Bingo cards, Tanis understood, from her previous 23-years of work experience in nursing homes, how much these recovering war-scarred patients looked forward to getting together in such recreational evenings.

As the churning Bingo balls rhythmically spun up to the surface, Tanis scooped them up, announced the number, and lighted the called digit on the electronic screen behind her. As the evening unfolded, we could hear Tanis' melodious number-calling, followed by several loud exclamations of "Bingo!"

After the game was over, Tanis' booming voice came over the microphone: "Prior to you getting your snack, I will come to you and squirt some foam on your hands. It is foam, not shaving cream. It is foam, not whipping cream. Rub your hands with the foam or the little critters in your hands, which you cannot even see, will nibble at you."

Then with a flourish, Tanis walked down the aisle, squirting antibacterial foam into the patients' open palms, repeating, "Get your zap and get your snack." Almost all the present veterans accepted Tanis' squirt, rubbing their palms together to do away with any lurking critters (germs, in common parlance).

Tanis Smith's easy going, friendly, and rapport-building approach with the veterans, and her playful routine to zap their hands with alcohol foam, signified

an important process unfolding at the VA healthcare facility in Pittsburgh (VAPHS) to combat and neutralize "critters." And hospital staff members like Tanis Smith, as well as her cohort of Bingo patients, represent soldiers in this battle.

What follows is the story of VAPHS' quest to combat methicillin-resistant *Staphylococcus aureus* (MRSA), a dangerous and devious bacterial infection. Interestingly, the story is not one of commanding doctors and powerful medicines but one of conversations, dialogue, self-discovery and, above all, coordination and collaboration among individuals who ordinarily would not have talked, and among silo-like hospital units whose unstated mission is to preserve their boundaries, identities, and expertise. A true cultural transformation occurred at the VAPHS, supported by a leadership that placed faith in its people, and the hundreds of small solutions they implemented to combat MRSA.

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MRSA: A DANGEROUS BACTERIUM AND A COMPLEX PROBLEM

"Just how dangerous are these MRSA bacteria?" we queried our escort Dr Jon Lloyd,[4] a retired general and vascular surgeon, and from mid-2004 to 2007, Coordinator, MRSA Prevention for VAPHS and Southwestern Pennsylvania.[5] Besides its Highland Drive campus, the VAPHS has two other major facilities in Pittsburgh—University Drive, an acute-care facility with 146 beds, which carries out both cardiac surgery and transplants, and the Heinz long-term care facility with 256 operational beds.[6]

To answer our question, Jon launched into a riveting story about MRSA Coordinator Heidi Walker's[7] self-conceived macaroni MRSA routine at the VAPHS' Heinz healthcare facility. Heidi purchased a large bag of uncooked macaroni and had the neighbor kids count the number of individual pieces it contained. Estimating that 21 bags would contain about 100 000 pieces, she purchased that many bags and loaded them on to a gurney along with a hand foam dispenser, gloves, gowns, and nasal swabs. Gathering a curious audience of patients, nurses, doctors, and other staff persons, Heidi would first provide basic information about MRSA and other hospital-acquired infections (HAIs), and then crack open a bag, scoop up a handful of macaroni, and drop the uncooked pieces into an empty plastic bowl one-by-one. While so doing, she told the group that each piece represented a human life lost as a result of HAIs. As the pieces clattered in to the bowl, Heidi would point to the 21 macaroni bags on the gurney, emphasizing that they contained a total of 100 000 pieces—the total number of lives lost each year to HAIs in US hospitals.

"What impact did Heidi's demonstration have on the participants?" we asked.

"It had a strong emotional effect," noted Jon. Heidi took an abstract, invisible issue and made it both concrete and observable by humanizing the needless deaths.

Over a six-year period in the United States, from 1999 through 2005, estimated MRSA-related hospitalizations more than doubled, from 127 036 to 278 203.[8] Jon explained that in contrast to the US certain northern European countries—notably Netherlands, Norway, and Denmark—have tamed MRSA. For instance, he said, "in Denmark, MRSA infections peaked in the mid-1960s—accounting for about 35 percent of infections, and have dropped precipitously to account for only 1–2 percent of *Staph aureus* infections over the past three decades. This means that a Danish patient with a *Staph aureus* infection can be treated with an old-fashioned beta-lactam antibiotic with faster response, higher cure rate, and quicker hospital discharge at lower overall cost to society."

Over three decades ago, when MRSA was recognized as a problem in these northern European countries, they embarked on a search and destroy mission. The government mandated complete surveillance, meaning that every patient was swabbed for MRSA both at the time of hospital admission and discharge. Those who had MRSA were isolated, decolonized, and treated. The MRSA loads in the environment decreased to very low manageable levels.

"Why is active MRSA surveillance not mandated in the US?" we asked.

The response was complex: If active MRSA surveillance is mandated, hospital costs will spike up dramatically, at least in the short run. More swabbing for MRSA means more lab work, more identified cases of MRSA, more isolation rooms, more supplies (e.g. disposable gowns, gloves, and the like), and heavy investments in information systems that can track patients' MRSA status from admission to discharge. In the day of highly managed healthcare and spiraling medical costs, MRSA is low on the radar of most hospitals. It is simply considered as a cost of providing healthcare. At best, routine swabbing for MRSA is reserved for patients in ICUs and surgical units, where the risk of infection runs high.

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In essence, MRSA represents a formidable foe that has, over time, gained a stronghold in US hospitals. In Jon's words, "We are wading upstream in an ever-widening and deepening MRSA river." The VAPHS is trying to turn the tide of this rising water.

Understated in the US media and public policy discourses, hospital-acquired infections kill as many Americans each year as do AIDS, breast cancer, and auto

accidents combined.[9] However, as noted previously, most Americans are likely to be clueless about MRSA.

At 95 percent of US hospitals, when patients are admitted they are not swabbed for MRSA. Some 75 percent of people who are colonized (who carry MRSA) do not know it. Of those colonized, approximately 30 percent will develop a serious MRSA infection. The most vulnerable include those who are older, immunosuppressed, chronically ill, and/or undergoing a surgical procedure.

Unlike the HIV virus, which cannot survive outside the human body for more than a few minutes, MRSA is a "very hearty organism," notes Dr Robert (Bob) Muder, the hospital epidemiologist at the VAPHS. MRSA can survive for up to six weeks on environmental surfaces. Further, MRSA transfers very easily by physical contact with a colonized person's skin, bedding, or personal effects. A simple skin break—even through a needle prick—can cause an MRSA infection among the colonized, leading to life-threatening complications and even death.

Further, to decolonize an MRSA carrier is a rather cumbersome process. A colonized person needs to apply an antimicrobial nasal ointment twice daily under medical supervision and take chlorhexidine showers for five consecutive days. Such decolonization is especially critical for patients who are about to have surgery.

The most common treatment for an MRSA infection is an antibiotic called vancomycin, usually given to a patient through a central intravenous line over a three to four week time period. During this time the patient needs to be quarantined—put in an isolation room. Attending hospital staff need to don new pairs of gloves and gowns each time they enter the patient's room. Also, very strict hand-washing is essential.

MRSA takes not just a "heavy physical toll" on its patients, it also takes "a psychological and economic toll of both the patient and their family members," Dr Muder emphasized. "Nobody wants longer hospital stays; neither the patients, nor the family members, nor the nurses, doctors, or healthcare administrators." An MRSA infection can cost a hospital tens of thousands of dollars (averaging $35 000) in patient care costs.

"Why is MRSA such a big problem in the United States?" we ask Dr John Jernigan,[10] an infectious disease specialist at the US government's Centers for Disease Control (CDC) with expertise in the epidemiology of HAIs, including MRSA. Based at the nation's premier public health agency, and recognized widely for his work on HAIs and pathogen-based bio-terrorism, Jernigan is one of CDC's most strident advocates for MRSA prevention and control.

John considered our question and then answered that the roots of the MRSA problem in the US were technical, social, and cultural.

Doctors tend to over-prescribe antibiotics—even when they are not required: for instance, in combating viral infections. Further, patients often do not finish their course of prescribed antibiotics, increasing resistant bacterial strains.

In addition, hand hygiene is poorly observed in most hospitals. As per CDC guidelines, doctors, nurses, and other staff should wash their hands both before and after attending to a patient, preferably in view of the patients. However, most of them only wash their hands after attending to a patient. The hierarchical culture within US hospitals also makes it difficult for patients and less-credentialed staff members to remind doctors and surgeons to follow hand hygiene precautions.

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COLLECTIVE MINDFULNESS: CHANGE FROM WITHIN[11]

"So what can one do to control and eliminate MRSA?"

Jon Lloyd replies, "The environment does not clean itself. MRSA will not tackle itself. But it is not hopeless. The power to change lies with the people."

As we reflect on Jon's words, it dawns on us that at Heinz, VA's long-term healthcare facility in Pittsburgh, Tanis Smith is playing precisely such a role to control MRSA. By zapping patients with alcohol-based foam after the game, Tanis' actions reduce the risk of MRSA transmission. Also Nurse Heidi Walker's 100 000 macaroni-piece demonstration—which spurred numerous conversations at the VAPHS—represents another spirited example of a Heinz staff member taking a self-motivated action to prevent and control MRSA. As we spent more time at VAPHS facilities spread across four field visits in 2006, we met with what seemed like an army of soldiers fighting MRSA in the trenches.

What explains this collective mindedness for an MRSA-free environment at VAPHS? How did the VAPHS get involved in preventing MRSA from the inside-out?

Toyota production system

The VAPHS got involved in MRSA prevention and control serendipitously. In 2001, Dr Jernigan began to collaborate with the Pittsburgh Regional Health Initiative (PRHI) on "zero goals," an initiative to reduce hospital-acquired infections and medication errors to zero.[12] Jernigan recalled, "The CDC wanted to pilot an MRSA prevention and control initiative with internal funds from our Antibiotic Resistance Working Group and PRHI, given its regional focus, was a logical partner. However, to meet our fiscal requirements and funding cycle deadlines, we needed an expeditious mechanism to channel funds to PRHI. The Veterans Administration, as a fellow federal agency located in Pittsburgh, seemed like a viable go-between organization." Peter Perreiah, formerly Production System Manager at Alcoa, served as team leader of the MRSA prevention initiative at the VAPHS from 2001 to 2004.

Perreiah, trained in the principles of the Toyota Production System (TPS),[13] put into place similar industrial processes at the VAPHS to reduce errors that jeopardized patient safety. Nurse Practitioner Ellesha McCray joined the TPS team for one-on-one mentoring with Perreiah.

Consistent with the TPS method, McCray and Perreiah gathered baseline data by keenly observing staff–patient encounters in 4 West. They noted, rather quickly, that the general perception among the staff was that "MRSA infections were primarily because of overuse of antibiotics, and not because of what *they* did or did not do." A lot could be done to raise the efficacy of MRSA "countermeasures"—that is, basic prevention precautions such as gowning, gloving, hand-washing, and use of hand disinfectant. Rather than focusing on forcing *individual* compliance, McCray and Perreiah were more eager to unearth *systemic* issues. If nurses weren't wearing gowns or gloves, or were not using the disinfecting alcohol rub, they wanted to know *why.*

One systemic problem they discovered involved management of supplies. The nurses could don gowns or gloves only if they were easily accessible, available on a rack, and the stock was replenished before it ran out. This was not happening, perhaps because accountability was diffused: for instance, it was unclear who was responsible for replenishing gloves.

Ellesha told us, "Our challenge was to develop processes and systems to make it easy for them to adhere to isolation procedures. . . . TPS is about standardization . . . about *Kaizen* [Japanese for "continuous improvement"],which are often small but important changes, like the perceptual shift from hand *washing* to hand *hygiene.* Standardization also meant improving systems to ensure that staff had what they needed to ensure patient safety." (*see* Figure 10.1)

FIGURE 10.1 Needs list.

By mid-2005, internal discussions were raging on VAPHS' executive floor about how to expand the MRSA prevention and control program beyond the two units on University Drive. While some systemic streamlining aspects of TPS (e.g. the organized supply room and equipment room) were implemented hospital-wide by directive from the upper administration, the MRSA "countermeasures" to improve quality of patient outcomes (e.g. through gloving, gowning, hand hygiene, and the like) did not naturally spread to other units. Should the VAPHS management continue with the implementation of TPS to reduce MRSA infection rates unit-by-unit?

VAPHS' Chief of Staff Dr Jain explained, "We made a strategic decision to move away from TPS in order to scale up the fight against MRSA. TPS was not failing, quite the contrary, but it had shortcomings on two important fronts. First, it required additional resources—and we were not in a position to hire another 10 to 12 Peter Perreiahs and Ellesha McCrays for our other units. It was slow and expensive. Second, based on my regular participation in unit briefings, I got the sense that the program had the appearance of being run by the team leaders."

Jon Lloyd added, "TPS has several drawbacks." For instance, it is highly regimented, expert-driven, and teacher-centric. It requires accredited teachers and other dedicated staff, making it extremely resource intensive. These attributes also make it very difficult and expensive for TPS to be replicated and scaled up.[14] Of the 13 units at VAPHS, TPS' impact on MRSA control was mainly felt on the 4 West Surgical Unit at University Drive and to a lesser degree in the SICU. "In light of our TPS experience, I was looking . . . rather searching . . . for other approaches to combat MRSA—approaches that were more people-driven, sustainable, and not as resource intensive." Such approaches do not come easily.

Positive Deviance: communicatively tapping the wisdom that already exists

Just like the first (TPS) stage of MRSA prevention and control at VAPHS, the second stage also began serendipitously. In November, 2004, when Jon Lloyd was browsing the website of the Plexus Institute, he found a link to an electronic copy of an article published in Fast Company magazine.[15] The article—about combating malnutrition in Vietnam—caught his eye.

"The only reason I read the article was because its setting was Vietnam," noted Jon. "In 1970–71, during the Vietnam war I served as a surgeon in the 3rd Field Army Hospital in Saigon. During this time, I fell in love with Vietnam and its people . . . including their hopes, aspirations, and dreams."

"What did this article do for you? How did it speak to combating MRSA?" we asked.

"The article was like a ball of hot fire on my computer screen," Jon noted with enthusiasm. "It was the first time I heard about the Positive Deviance (PD) approach to change. PD advocates local solutions—solutions that are owned by the people, not imposed by experts. Unlike the TPS approach to MRSA which

was all about eliminating errors and defects, PD focused on amplifying what was going right."

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Jon was intrigued by the PD mindset and by the facilitative approach advocated by the late Jerry Sternin, a former Peace Corps Director in several countries and founder of the Positive Deviance initiative at Tufts University, and his wife and collaborator, Monique, who oversaw the PD initiative in Vietnam. He shared the article with Dr Jain who was intrigued and supportive.

Positive Deviance (PD) is an approach to social and organizational change that enables communities to discover the wisdom they already have, and then to act on it.[16] PD initially gained recognition in the work of Tufts nutrition professor Marian Zeitlen in the 1980s when she began focusing on why some children in poor communities were better nourished than others.[17] Zeitlin's work used an assets-based approach, identifying what's going right in a community in order to amplify that, as opposed to what's going wrong in a community and fixing it. The community itself must discover the solutions (including the resources) that it already possesses, and find a way to amplify them through peer-based social proof.

The Sternins built on Zeitlin's ideas to organize various PD-centered social-change interventions around the world. They institutionalized PD as a social-change approach by demonstrating how it could be operationalized on a wider scale.

In 1991, the Sternins faced what seemed like an insurmountable challenge in Vietnam. As Director of Save the Children in Vietnam, Jerry was asked by government officials to create an effective, large-scale program to combat child malnutrition and to show results within six months. More than 65 percent of all children living in the Vietnamese villages were malnourished at the time. The Vietnamese government realized that the results achieved by traditional supplemental feeding programs were rarely maintained after the programs ended. The Sternins had to come up with an approach that enabled the community to take control of their nutritional status. And quickly!

Building on Zeitlin's ideas of PD, the Sternins sought poor families that had managed to avoid malnutrition without access to any special resources. These families were the positive deviants. They were "positive" because they were getting good results, and "deviants" because they engaged in behaviors that most others did not. Coached by the Sternins in a process of inquiry, the communities discovered that mothers in the PD families collected tiny shrimps

and crabs from paddy fields, and added those plus sweet potato greens to their children's meals. These foods were accessible to everyone, but the community believed they were inappropriate for young children.[18] Also, these PD mothers were feeding their children three to four times a day, rather than the customary twice a day. PD mothers were also more likely to actively feed their children by hand, in contrast to other mothers who just placed the rice bowl in front of their children.

The Sternins helped the community design a program for itself whereby community members could emulate the positive deviants in their midst. Mothers whose children were malnourished were asked to forage for shrimps, crabs, and sweet potato greens, and in the company of other mothers learned to cook new recipes that their children ate right there. Within weeks, mothers could see their children becoming healthier. After the pilot study, which lasted two years, malnutrition had decreased by an amazing 85 percent in the communities where the PD approach was implemented. Over the next several years, the PD intervention became a nationwide program in Vietnam, helping over 2.2 million people, including over 500 000 children improve their nutritional status.[19]

Positive Deviance challenges the traditional role of outside expertise, focusing instead on building the internal capacity to solve the problem. Social and organizational change experts typically take upon themselves the role of discerning the deficits in a community, prioritizing the problems, and implementing solutions. All this work is done from the outside and presumes that communities can't do this for themselves. In the PD approach, the role of experts is to lift up the community's capacity: to find positive deviants, the people in the community who have already identified new solutions, and to coach and mentor internal change agents in disseminating these innovations by presenting social proof to their peers.[20] The consultant works behind the scenes to facilitate a process for identifying and amplifying local wisdom, with the expectation that local solutions (and their benefits) will be more sustainable than solutions introduced from outside.

Positive Deviance challenges the traditional role of outside expertise, focusing instead on building the internal capacity to solve the problem.

Another hallmark of the PD approach is its emphasis on hands-on learning and actionable behaviors. As Sternin emphasized, "It is easier to act your way into a new way of thinking than to think your way into a new way of acting."[21] So the PD approach turns the well-known KAP (knowledge, attitude, practice) framework on its head. Rather than increasing knowledge to change attitudes which then changes practice, PD focuses on changing practice directly with the idea that new knowledge results from the direct integration of (and subsequent reflection on) concrete action steps.

Evaluations of PD initiatives show that it works because the community owns the problem, as well as its solutions.[22] PD is *not* about experts or top management securing *buy-in* from the various stakeholders or about securing compliance by way of directives, tacit authority, or punitive action. The power of PD is foundationally anchored on people *owning* the change enterprise. Far too many change initiatives fail as they depend upon buying into an expert vision, usually imported from outside (*see* section on Self-Determination Theory in Chapter 3).

That is what grabbed VAPHS' Jon Lloyd as he read the PD article in *Fast Company*. In PD, people are not told what to do—even if that seems to be efficient and the "right" thing to do. Instead, they're supported in figuring things out for themselves. It dawned on him that this might be the problem with the Toyota Production System (TPS) approach that the VAPHS had implemented. It was focused on "telling" people (through designated "teachers") the "right" way to eliminate bottlenecks and errors. While the MRSA reduction outcomes were dramatic for one surgical unit, TPS had required a substantial infusion of human and material capital from the outside. Further, attempts to transplant the lessons learned to other units, even in the same facility, met with tacit resistance and yielded disappointing results.

Jon was intrigued that the Sternins had effectively used the PD approach to address such diverse and intractable problems as preventing childhood anemia, eliminating female genital cutting in Egypt, curbing the trafficking of women in Indonesia, increasing school retention rates in Argentina, reintegrating returned girl-child-soldiers in Northern Uganda, and increasing rates of condom use among commercial sex workers in Viet Nam and Burma.[23] Why not try the Positive Deviance approach for MRSA prevention and control at the Veterans Administration Healthcare System in Pittsburgh?

POSITIVE DEVIANCE COMES TO VAPHS

In March 2005, Jerry Sternin conducted two workshops on the PD process in Pittsburgh. Some 50 representatives from 10 Pittsburgh-area hospitals—all interested in MRSA prevention and control—were invited to attend. The VAPHS' two major facilities (the University Drive acute-care hospital and the Heinz long-term care facility) were well represented. The workshop outlined the "4 Ds" of Positive Deviance.[24]

1 *Define* the problem.
2 *Determine* if there are any individuals/entities already exhibiting the desired behavior/status. (Identify the "Positive Deviants.")
3 *Discover* the uncommon, but demonstrably successful practices/strategies enabling the PDs to find a better solution or outperform their "neighbors" with access to the same resources.
4 *Design* an intervention enabling others in the "community" to begin to practice the PD strategies. (Note: Focus is on *providing opportunities for practice* rather than just sharing information.)

The Sternins stressed that PD is, in some ways, "a leap of faith": one needs to trust that the solution can and will be found *within* rather than having to be imported from without. Once discussion got started and workshop participants began identifying successful behaviors and practices already underway in the hospital, things began to roll. Unlike "best practices" and "benchmarking," which rely on an external source to "identify and introduce a superior template,"[25] the Positive Deviance approach relies entirely on existing talent and solutions. Although many at VAPHS were skeptical that an approach that was effective to combat childhood malnutrition in Vietnam would hold relevance for MRSA control in a US healthcare system, others, including Jon Lloyd, were excited by the notion of amplifying "what works" instead of fixing "what does not work." As Jon noted, "The US healthcare industry has been too focused, for too long, on fixing errors. Too preoccupied with making right what is wrong. Nurses and hospital staff have been bombarded with a litany of top-down expert-driven directives to fix a broken system. In this context, PD's focus on 'what works' was greeted with open arms." Referring to Tanis Smith's foamy zap before the snack in Heinz's Bingo room, Jon emphasized, "The expertise to tackle MRSA was right under our noses. There are hundreds of experts here; the key was recognizing and harnessing their presence."

Inviting participation

In July 2005, Jerry and Monique returned to Pittsburgh to do a follow-up PD workshop and consultation with the staff at VAPHS. After issuing a broad invitation to participate, the Sternins knew that the next step in planning the workshop was out of their hands: participants would have to "self-select"—those with time and energy to dedicate to the fight against MRSA would show their commitment simply by showing up. The invitation yielded a core group of PD champions including two recently-appointed full-time MRSA prevention coordinators—Cheryl Creen at the Heinz facility and Candace Cunningham at University Drive. Cheryl and Candace had both "self-selected" by applying for the open positions. With support from top management, notably VAPHS CEO, Mike Moreland, and Chief of Staff, Rajiv Jain, these internal champions led the PD process from the front.

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Dozens of "Discovery and Action Dialogs" involving hospital staff from all walks—nurses, doctors, custodians, van drivers, and lab technicians—were conducted over several weeks to solicit all kinds of ideas for preventing and controlling MRSA and to invite further involvement in pilot-testing

solutions. Patients, a previously untapped resource, also began participating in earnest.

At first glance, it may seem that a "field of dreams" model was in operation—that if the MRSA cause was broadcast loudly and widely enough, interested individuals would simply emerge, i.e. "they would come." But the logistical reality of working in a hospital dictated that more than a good cause was needed in order for people to "self select" and rally to the cause: leadership was also required. Supervisors had to agree to release staff members from their regular duties to attend meetings, and also to create the space and time for those staff members to report back what they learned.

Some of these meetings went on for hours, sometimes past midnight. They yielded several walls of sticky yellow Post-it Notes capturing diverse, internally generated ideas on controlling MRSA. Out of these dialogues emerged several patient-generated solutions, including recommendations about placing foam dispensers in the recreation room, in the cafeteria, and in the library—locations where a lot of people touch the same bingo cards, the same serving spoon, or the same newspaper, making the risk of MRSA transmission very high.

Many participants, who ordinarily would never be consulted, and whose voices were routinely overlooked, rejected, or silenced came to Jon, Cheryl, and Candace, noting that, "For the first time, we felt that someone cared about our ideas."

Joyce Ewing, a Nurse Manager of the Surgical Intensive Care Unit at the VAPHS explained that it was management's responsibility to create an atmosphere where staff would feel comfortable sharing their ideas and concerns. "The evolution of the PD program has been phenomenal in helping to support a model of what, in nursing, we call 'shared governance.' The clinical practice issues are back in the hands of the frontline workers—where they belong. The traditional management paradigm of 'You need to do this or that' or force-feeding top-down solutions has been replaced with all staff taking responsibility for MRSA prevention and control. And because the staff *own* the solutions they propose, they comply with them." People don't turn their backs on what they've created themselves.

"How does the staff come up with new solutions?" we asked.

"When staff members see that a patient on their unit has converted from MRSA negative to MRSA positive, they put on their Sherlock Holmes hat to deduce how that transmission might have happened. Then they develop an intervention to address the problem" (*see* Fig 10.2).

Joyce Ewing emphasized that while staff ownership of MRSA problems and solutions has been key, the support of the administration at the VHA has also been crucial. "Take Dr Muder, for example. He really comes to bat for nursing. He and Dr Rajiv Jain are open to suggestions and willing to listen. In Pittsburgh, a historically union town, this type of relationship between 'management and labor' is unique."

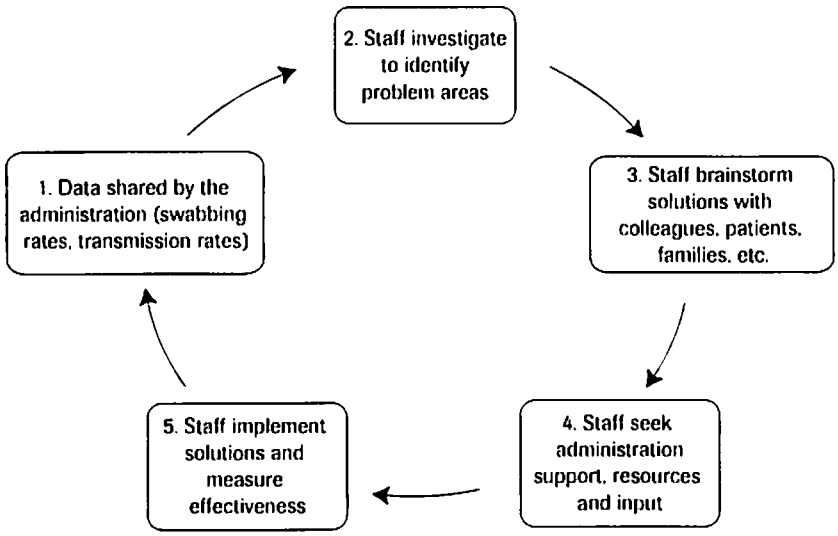


FIGURE 10.2 Data driven problem-solving model.

Expanding the solution space

During our visits to Pittsburgh in 2006, we were introduced to many worthy people—doctors, nurses, patients, housekeeping staff, van drivers, and the like—who had come up with many worthy ideas to prevent, control, and eliminate MRSA.

An aura of pride and accomplishment was palpable in the nursing stations we visited during the weekly Wednesday morning MRSA stock-taking rounds. In at least two units, prominently displayed multi-color charts announced no new MRSA infections during the past few weeks. In one unit, there was one MRSA infection recorded in the past week. The display of this data served as a reminder to staff members that an infection had occurred, and that it was necessary to determine the cause and get back in the "MRSA free" zone. From what we were observing and hearing in our discussions with staff members, it appeared that several hundred brains at VAPHS, previously busy with other routine tasks, were now actively working to expand the solution space to combat MRSA.

From what we were observing and hearing in our discussions with staff members, it appeared that several hundred brains at VAPHS, previously busy with other routine tasks, were now actively working to expand the solution space to combat MRSA.

Let's engage with some of these people, ideas, and actions for they signify the expanded solution space for MRSA prevention, control, and elimination at the VAPHS.

In fall, 2005, when Cathy Hill,[26] LPN at Heinz's long-term care unit, first heard that the hospital staff were being encouraged to provide suggestions about how to combat MRSA, she was initially hesitant. Usually such directives were imposed from the top, with little or no input from floor nurses. Further, 12 years of nursing experience had taught Cathy that MRSA was a formidable, invisible enemy, lurking on curtains, light switches, bed linen, gowns, counter tops, handrails, and, on the patients' skin and clothing.

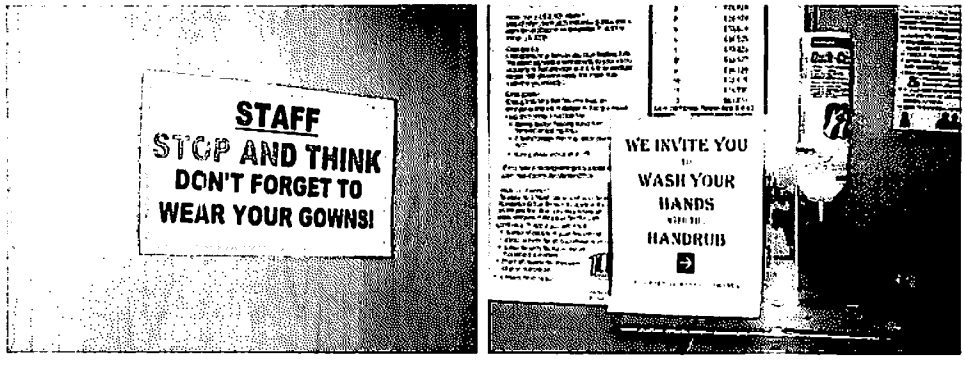
"So, Cathy, what did you do to tackle such a sneaky, invisible enemy?" we asked.

Beaming, Cathy responded, "I'm a visual person. I started to think how invisible germs could be made more visible." Someone, somewhere (she doesn't remember who or when), told Cathy about a product that made hand-to-hand transmission visible, perfect for simulating how germs are transmitted. After searching on the Internet, Cathy found Glo Germ, an invisible substance—available as liquid, gel, or powder—that glows when exposed to ultraviolet light.

The Glo Germ arrived at Heinz just in time for Cathy and her accomplices to set the stage for a stealth demonstration. The setting was perfect: In March, 2006, VAPHS had organized a day of MRSA stock-taking and results demonstration, and Cathy smeared Glo Germ powder on the pens that folks used to sign in. Around the corner, out of sight, was an ultraviolet light apparatus, awaiting the unsuspecting participants. As the day wore on, several scores of people were ushered to this apparatus.

Cathy recounts, "People were shocked to see how the Glo Germ had unsuspectingly spread." Under the UV light, the Glo Germ powder glowed on their hands and heads, shirts and skirts, glasses and watches, and on plates and cups. MRSA, hitherto an abstract, invisible idea for most folks at Heinz, was becoming concrete and visible.

One of the most visible signs of the VAPHS' efforts to combat MRSA is the army of alcohol hand-rub dispensers lining its hallways; they are to be found everywhere—in the recreation rooms, dining rooms, ceramic rooms, and even the library. In the Dementia Unit, where such dispensers are a hazard, nurses



FIGURES 10.3A AND 10.3B Precaution signs.

may be seen with hand rub "holsters" on their belts or hand rub "necklaces"—miniature dispensers strung on a yarn and worn around the neck. While hand-rub dispensers, stationary or ambulatory, are highly visible, there are hundreds of MRSA "countermeasures," which according to Dr Jon Lloyd are "hidden from plain view." These anti-MRSA efforts result from empowered staff members and patients, not from an administrative directive from the executive floor or from a CDC guideline.

Kathleen Risa's anti-MRSA trick is "the knuckle." As a long-time nurse and the newly appointed MRSA prevention coordinator for the VA-led national initiative, Kathleen is constantly thinking of how to subvert the transmission of these pathogens. So, as we rode the elevator up, Kathleen pushed the button with a knuckle, not a fingertip (which is likely a more potent vector of MRSA transfer). As we did the math for the MRSA transmission potential of a panel of buttons on one elevator car—used by hundreds of people round-the-clock, we concluded that knuckling a panel might be one way to thwart, or slow down, the transmission cycle. Most interestingly, when we mentioned Kathleen's knuckle-trick to others at VAPHS, numerous other home-grown anti-pathogen strategies surfaced: For instance, the "inside jacket gloving" technique in which the inside of a jacket is used to (un)lock doors of toilet stalls; the "foot flushing" maneuver in which the foot is used to operate toilet flush levers; and the "elbow side-arm swivel" to shut off the water faucet.

Glenn Buzzelli, one of the RNs in the Surgical Intensive Care Units (SICU) spoke about the several newly-initiated anti-MRSA measures in his unit. When his narrative on the "disposable" EKG lead wires drew a blank expression from us, he guessed, rightly, that we were not medical professionals. He continued, "You wouldn't *believe* all the stuff that can get on these EKG lines."

We asked, "So how do you clean them?"

"We don't," he said. "One of the other RNs, Dave Tzakas, hunted like crazy... and finally found [an EKG line] that was cheap enough to make it disposable.... So now we just throw the dirty ones away."

Another visible indication that the fight against MRSA at the VAPHS is in full swing could at first glance go unnoticed. Passing a meeting room at the Heinz long-term care facility, one might catch a glimpse of Peter Knickerbocker, a pre-med student at the University of Pittsburgh and a hospital volunteer, sitting and dialoguing with a group of patients. This gathering is one of the weekly meetings that Peter organizes to discuss strategies to promote hand hygiene and to listen to patients' ideas about their own involvement in combating MRSA. A typical meeting yielded the following recommendations from patients: 1) Ask MRSA patients to share their stories with other patients in future meetings. 2) Issue a hand sanitizer to each patient upon admission along with written instructions on its use. 3) Ask patients to share what they've learned about hand hygiene with other patients when they play bingo, gather in the smoking areas, and watch football games together. For the VAPHS staff, such respectful, dialogic feedback sessions with patients have proven to be a valuable way to increase

knowledge flows, and increase ownership of both problems and their solutions by all stakeholders.

Rock to water logic

Edward De Bono, in his 1993 book *Water Logic* describes two different types of thinking: Rock logic is rock-like—hard and unyielding; something that sits on a surface and does not budge. Water logic, on the other hand, is water-like—soft and fluid; it spreads out and explores when flowing on a surface.

While rock logic leads to questions that focus on "what is" (e.g. that's the way it is, or that's the way it is not), water logic leads to questions that focus on "to" (e.g. What does this flow to? What does this lead to? What does this add up to?) Bono argues that while both ways of thinking are functional and useful, they yield very different outcomes.

Hospitals are bastions of rock logic. Operating in a highly controlled regulatory environment, strict guidelines govern the practice of medicine. Processes are prioritized and protocol reigns supreme. Uncertainty and ambiguity are unwelcome and need to be vanquished. The metaphor of a "well-oiled machine" is valorized; each part should know what "is" and "should be." Clearly this rock logic serves a very useful purpose in the implementation of technical processes. However, it can be limiting (*see* Organizations as Machines in Chapter 2).

Jennifer Scott, a nurse in Heinz's 2 South Unit, described to us a series of recent events on her floor that illustrate some shifts in thinking from rock to water logic. Jennifer credits the PD-inspired processes at Heinz for such a cultural shift.

A patient on Jennifer's floor was sinking rapidly and a "code red" alert went out on the hospital intercom. "The patient had 'alphabet soup'—all the germs one could possibly get. And I remember, outside the patient's room someone was playing the role of a sentry, dispensing gowns and gloves at the door. You couldn't get in unless you were properly gowned and gloved. There were people dashing in—doctors, nurses, nursing assistants, respiratory therapists, and others—from other floors. One of the doctors, Dr Hubicz, had 10 extra pairs of gloves in her pocket that she handed out to people as they came in."

While the patient's room was a beehive of activity, Jennifer remembers thinking, "What about the crash cart [the portable cart used to wheel in all the emergency supplies and resuscitation equipment]? How is it cleaned? What happens to a monitor that has to be placed on an infected patient's bed, just so that the cord could be plugged into the nearest electric outlet? Or for that matter, what happens to the electric cord itself?"

Jennifer's acute awareness of how people and equipment move in an emergency led to her to pose questions inspired by water logic. Her thoughts focused not only on "what is", e.g. code red, but also on the "to", e.g. where the crash cart, and its equipment and supplies, go to *during* and *after* the cart's use.

Jennifer's new way of thinking, which she calls her "MRSA radar," travels with her. "I went to this conference with my colleague, and there was this

vendor, selling ceiling-mounted lifts," Jennifer recounts. "There was a crowd around him, and he was going on and on about how this new lifting machine, with canvas straps, could be mounted on the ceiling of every patient's room. He said, 'Now every patient could have their own ceiling lift—and it would last for 50 years!'"

The first thought that hit Jennifer was, "Okay, but how do you *clean* it? If we can't clean it, we have no use for it." She went on to describe the vexing hygiene challenges they face. "One issue is that we have designated MRSA isolation rooms, but then we have *portable* equipment. So it's not enough to have staff put on gowns and gloves when entering a MRSA isolation room. They have to remember to take them off every time they exit and dispose them safely. They also have to make sure that the *equipment* doesn't go from room to room without being cleaned."

"Ah, that explains the disposable stethoscopes and blood pressure cuffs in isolation rooms," we stated.

"Yes, that's part of it," Jennifer concurred, "but most of the equipment is not disposable."

"So how do nurses feel about going into these isolation rooms, given the complicated hygiene routine? Do they dread it?"

"When everyone's MRSA radar is on, you get used to it," Jennifer replied.

Another person engaging in water logic on Heinz's 2 South is Unit Clerk Karen Stofan. When we met her in 2006 (she passed away in 2007), Karen was concerned that once patients get stuck with a MRSA diagnosis, it stays with them throughout their hospital stay. Her goal was to not just be on top of who is *MRSA-positive*, but to know when they've become *MRSA-free*.

"That's the biggest switch for me from what we used to do," Karen said. "Now we're getting people cleared from the MRSA list." She described how this is done. "I check the list and see who tested positive but hadn't been cultured for months. We swab them again and if the results are negative, we re-swab to be sure. Another negative culture and they are cleared from the list."

Jennifer added: "It used to be that once you went MRSA, you were MRSA forever. Just recently we cleared five people off the list!"

Another newly introduced feedback and feed-forward loop at VAPHS' Heinz facility was sharing the MRSA list across the hospital units. This purposive sharing is especially important at Heinz facility as the patients here stay for longer periods and receive care in multiple units located on different floors. Sharing the MRSA list allows everyone from physical therapists to Bingo facilitators to know who the MRSA-positive patients are so adequate precautions can be taken in a respectful manner without stigmatizing. In her book *Communicating in the Clinic*, Laura Ellingson emphasizes that information sharing in typical healthcare establishments mostly happens between "dyads and triads of [existing] team members."[27] However, the VAPHS seems to be establishing some new benchmarks in information-sharing, given ideas on MRSA prevention are shared beyond traditional teams: nurses now share "what works" across units;

and housekeepers share MRSA prevention tips with physical and occupational therapists.

Nurses now share "what works" across units; and housekeepers share MRSA prevention tips with physical and occupational therapists.

As we were leaving Unit 2 South, we saw Jennifer heading back to the crash cart. "I'm thinking that sooner or later this screen is going to go if we keep cleaning it," she said, pointing to the EKG monitor sitting on the top shelf of the mobile cart. After a pause, she continued. "What if we wrapped the screen in plastic *separately*? Then if we used the EKG monitor we could just change the plastic instead of cleaning the screen and everything else on the cart . . ."

At Heinz, new ideas, like water, continue to flow.

A key component to keeping the "flow" of good ideas coming is management support. Jennifer's eagerness to improve the process of cleaning the EKG monitor is fueled by her knowledge that if she comes up with a good idea, it will find a receptive audience in someone like Cheryl Creen.

Enabling innovation and ownership

One of the first things you see when you enter Cheryl Creen's office is a typewritten sheet of paper on the bulletin board: "The question isn't who is going to let me, it's who is going to stop me." As MRSA coordinator at Heinz, one of Cheryl's major duties is to follow up on ideas and suggestions offered by staff.[28]

British sociologist Anthony Giddens warned against the tendency to identify structure solely as constraint. Structure, he points out, can also be enabling. Within the enormous structure that is the Veterans Administration and its necessary framework of guidelines, rules and regulations, Cheryl creates structures that enable her staff to think creatively.

FIGURE 10.4 Jennifer Scott and crash cart.

Prior to her selection as MRSA coordinator at Heinz, Cheryl Creen was a much-loved Unit Manager for 2 South. She constantly gets emails from the nurses there. "They'll write, 'Has anyone considered this or that?' They're not afraid to share their ideas," Cheryl noted with pride.

Cheryl credits the close-knit relationships in her previous unit as the reason why "people speak up and are not always on their guard." Unit cohesion is what made a member of the housekeeping staff feel comfortable enough to teach "a thing or two" about hygiene to the rest of the unit. One day, she recalled, some staff members were talking about cleaning the room of a patient with the C-Diff (*Clostridium difficile*) bug, "and Eddie, from housekeeping stepped forward and said 'alcohol won't work on spores of C-Diff. We have to use Clorox.'"

One of the resident doctors exclaimed, "Why didn't anyone tell us this before?"

One of the reasons that the doctor hadn't been told before was the lack of opportunities for doctors to interact with housekeepers, or for other such cross-functional conversations. So Cheryl created them. "We held a lot of floor-wide social events," she recalled. "And I made sure *everyone* was invited—doctors, nurses, patients, and even staff from the environmental (housekeeping) unit."

Such events promote non-hierarchical, stress-free informal interaction between individuals with diverse functions, creating what Cheryl described as a "culture of cohesiveness." These events build a *relational infrastructure* that facilitates information sharing and the dissemination of innovations. The relational infrastructure is built slowly, as staff members get to know one another not just as colleagues but as people. By attending one of Cheryl's floor-wide events, the hospital resident mentioned above could now learn not only about the need to fight C-Diff with Clorox but also that Eddie Yates is a Veteran himself and that he has a BA in economics. Knowing Eddie as a person makes it easier to approach him later with questions, comments and requests for suggestions.

Cheryl's social events brought together people with diverse perspectives adding new ideas into the mix of what Anthony Suchman has called the "organizational conversation" (*see* Chapter 2)[29]. Another effort to bring different perspectives together was the weekly briefing on MRSA transmission and infection rates attended by unit staff and management. As noted by Suchman, the outcomes of such conversations couldn't be predicted or controlled, but they offered an ideal opportunity for new ideas to emerge and spread.[30] Take the example of "the list."

Jon Lloyd recounts the story: "Fred Chen from physical therapy began attending the [MRSA] briefings." He started getting to know several people on the unit. One day, he asked one of the LPNs if he could have a copy of the list of MRSA-positive patients. As a result of that question, wheels started turning. Other people began asking for the list, which prompted more people to begin thinking about how MRSA could be transmitted in their areas, which prompted the development of new precautions.

Nursing Program Leader Ginny Rudy observed, "Once staff members come up with their own interventions, they *own* the solutions." Management plays a supporting role, attending the briefings on each unit, listening, providing resources and removing barriers—but it does not direct or control the process. Staff members have *ownership* of the solutions, ensuring that the solutions will be implemented more readily.

Henri Lipmanowicz, a former executive with Merck Pharmaceuticals, articulated the important difference between ownership and the concept of "buy in," which is frequently used to describe organizational change processes. These terms, he stresses, are not interchangeable. Ownership of an idea, he writes, "means that you have participated in its development, that it is your choice freely made. . . . Buy in is the opposite—someone else or some group of people has done the development, the thinking . . . and now they have to convince you to come along and implement their idea."[31] Lipmanowicz argues that it is essential for leaders to recognize the difference between these two terms because only ownership can lead to true enthusiasm and true commitment. He writes: "If leaders involved UPFRONT all the people that will be involved later on in the implementation there would be no need for buy-in . . ."[32]

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Dr Bob Muder echoed the importance of supporting staff-led innovation. "We now rely very little on punitive measures. Healthcare workers are professionals—they want to do the right thing. If you give them support and the resources they need, they're going to do what's necessary [for patient safety]."

Cheryl Squier, an infection control nurse with 27-years experience at the VA described the VAPHS's successful fight against MRSA as being due not only to the trusting and patient attitude management demonstrates towards staff but also to the pride staff feel in fixing problems on their own. "What amazes me the most," she confided, "is that things happen without me even knowing about it. Staff come up with very localized solutions—they find a way to make things work for their area—and the changes that come from MRSA prevention impact the practices for preventing other infections."

Sometimes change comes about only because the guy who cleans the rooms feels comfortable enough to explain to the [Chief Medical Officer] what he thinks needs to be done.

Just as solutions can emerge in dialogue, so too can new problems. The day we spoke with Cheryl Creen in her office, she was working to track down the

fire hazard regulation that barred foam containers from being installed in the hallway. "We'll do what we can," Cheryl said enthusiastically.

> Sometimes change comes about only because the guy who cleans the rooms feels comfortable enough to explain to the [Chief Medical Officer] what he thinks needs to be done.

Reports from the "red zone"

VAPHS patients who are infected with MRSA at the acute-care University Drive facility are kept in isolation rooms. The floor around their bed is painted with a large red rectangle. Hospital staff know if they enter the "red zone" they need to don fresh gowns and gloves and remember to remove them when exiting. At the Heinz long-term care facility, patients are often ambulatory and also stay for longer periods and therefore cannot be completely isolated. Nonetheless, special precautions are required with MRSA patients there, too.

The way most hospital staff exit and enter rooms is not lost on the patients. "They'll wash their hands *on the way out*," noted Darryl, a veteran who had been diagnosed with MRSA, "but only a few wash them *on the way in*." Darryl does agree that, in the past year or so, the staff is doing a lot better with hand washing on their way in.

"When a doctor, or a nurse, enters my room," continued Darryl, "and doesn't wash their hands, I deliberately do not make eye contact with them. Instead I just look at the sink." As Darryl talked, he mimicked the obvious sideways glances he would make. "If they do not understand, I'll just look back at the doctor, and then back at the sink, until they wash their hands."

Darryl, on his own, has cracked the communication code to neutralize power and hierarchy at VAPHS. It is hard for patients, lying on beds and hooked to tubes and monitors, to verbally tell their attending doctor to wash their hands. Such a good-faith request may be construed as being rude, and patients fear reprisals. So patients usually silence themselves. Darryl has learned to use silence with some simple non-verbals to politely convey his main point.

The trick, Darryl will tell you, is to smile when looking at the sink. A smirk could backfire. If one did not wish to look at the sink, one could just look up at the newly-plastered poster on the front wall.

"Patients are not the problem. We could be part of the solution," noted Darryl. "If one guy is contaminated, he can contaminate others." Darryl rues not having informed a fellow veteran about the dangers of MRSA in a timely manner. The veteran ended up infected. "If I could have gotten to him two days earlier . . ." Darryl lamented, his thoughts trailing off.

"What has the patient group been up to?" we asked.

For one, the patients decided to create their *own* anti-MRSA brochure.

The hospital-produced brochure is entitled "Resistant Bacteria: Methicillin

Resistant *Staphylococcus Aureus* and Vancomycin Resistant Enterococcus." The patient-produced brochure has a different title: "Keeping America's Veterans Healthy—A guide to MRSA—A simple way to shorten your stay." Both brochures have a section on risk. Interestingly, where the hospital-produced brochure notes that healthy people are at very little risk of *getting* an infection with resistant bacteria. the patient-produced brochure stresses that everyone who enters a hospital is at risk of *becoming a carrier.* Both risk statements are true but they frame the situation differently. The patient-produced brochure exhorts veterans to become active in MRSA prevention. Lines on the last page of the brochure read: "Join in the effort to prevent its spread to other veterans. Ask a nurse how you can help." Inviting patients to expand the "solution space" has provoked new, insightful perspectives on MRSA prevention and control.

The patient-produced brochure is more credible with other patients because the messages come from fellow veterans. Trusting a fellow soldier, and covering each others' flank, is key to survival in a battlefield, and veterans at the VAPHS are expanding the application of these principles in another form of combat—with a lurking, invisible, and dangerous enemy.

The patient-produced brochure is more credible with other patients because the messages come from fellow veterans. Trusting a fellow soldier, and covering each others' flank, is key to survival in a battlefield, and veterans at the VAPHS are expanding the application of these principles in another form of combat—with a lurking, invisible, and dangerous enemy.

Gathering a group of patients and asking for their insights is "resource neutral" since it involves tapping into *existing* resources rather than requiring that additional resources be brought in from outside. Of course, the patient-produced brochure couldn't have happened without the support of hospital leadership. Asking hospital volunteers like Peter Knickerbocker to organize and record these meetings was an efficient, low-cost way for management to support the MRSA prevention effort while supporting the veterans' desires to be part of the effort to solve problems that affect them directly. At the VAPHS, veterans aren't restricted to the "sick role,"[33] nor even to the role of decision makers in their *own* care: mechanisms have been created for patients to also have a role in the safety of other patients.

Hanging the results for all to see

Through Glo Germ demonstrations, foam zaps after Bingo, macaroni routines, and "discovery and action dialogues," a collective mindfulness about combating and eliminating MRSA is shaping up, especially at VAPHS' Heinz facility. Cheryl Creen and Jon Lloyd, Heinz's MRSA commanders, have worked hard to create feedback loops, so that experiences of one Unit can be shared with other units,

victories can be celebrated, and disappointments can be met with resolve.

An important feedback loop consists of rainbow charts which are prominently displayed at all nursing stations at Heinz reporting on new MRSA infections and transmissions during the past week. The pride of the unit staff is evident at the weekly briefings when they can report no new MRSA infections.

During our four visits to VAPHS, we attended several weekly MRSA briefings. Usually Jon Lloyd and MRSA coordinators Cheryl Creen (at Heinz) and Candace Cunningham (at University Drive) meet with the unit staff to discuss progress, identify bottlenecks, and address concerns. What was palpable in the units we visited was the individual commitment to patient safety displayed by the staff—from doctors, to nurses, to housekeepers, to van drivers. It became apparent in these 15-minute briefings that the responsibility and accountability for a new MRSA infection lies with the entire group. No one person can be held responsible and no unit member should be excluded when discussing patient safety.

In our July 2006 visit, the weekly briefing on Heinz's 2 South Unit was lead by housekeeping staff member Edward Yates. Twenty-two staff members were in attendance, including three patients. Ed happily reported that 2 South had zero MRSA infections, zero colonizations, and had achieved 100 percent nasal swabbing rates.

Dr Muder explained that even though the briefings are now led by "front-line" staff like Ed Yates, the presence of senior management is nonetheless crucial. If problems arise, for example, staff can request what they need directly to management rather than having their requests languish in traditional bureaucratic channels. Furthermore, Muder explained, "It is important that staff get feedback when things are going well so they can see the impact of what they're doing *right*."

And yet, Muder stressed, fighting MRSA is not just about feeling good. "It's about patient safety—and when you see the data that demonstrates that you're

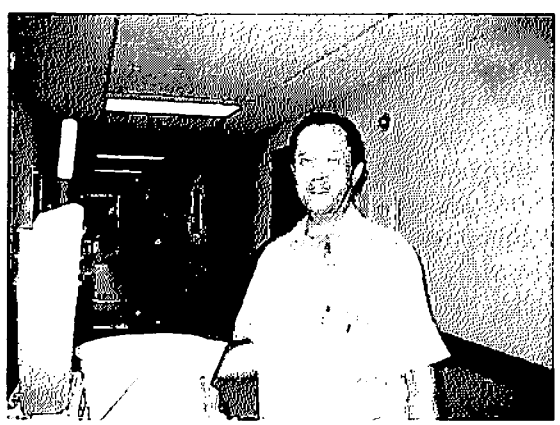


FIGURE 10.5 Eddie Yates.

doing something right—that infection rates are down—*that* makes people feel good. They can see the link between their actions and the results." As illustrated in the "Data-driven problem-solving model," once front-line staff see that what they are doing is working, and that their actions have the support of hospital management, they are free to try new things, some of which will succeed and some of which will fail. The key is that ideas—good, bad *and* ugly—continue to flow.

It's about patient safety—and when you see the data that demonstrates that you're doing something right—that infection rates are down—*that* makes people feel good. They can see the link between their actions and the results.

DECLINING MRSA RATES AT VAPHS

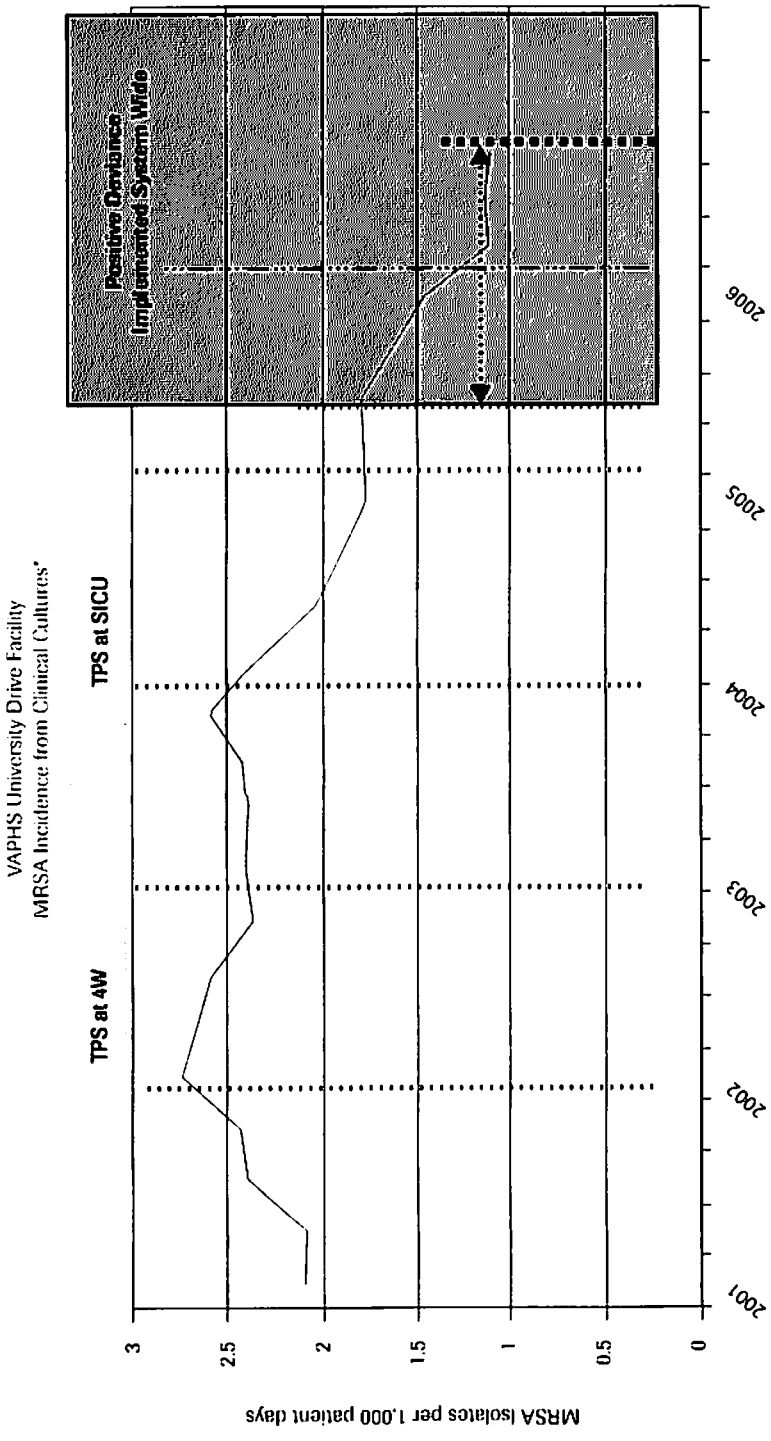
What evidence exists for declining MRSA rates at the VAPHS? How much of this decline may be attributed to the system-wide adoption of Positive Deviance? MRSA surveillance data at VAPHS show the following trends:

- Incidence of MRSA from clinical cultures dropped house wide at VAPHS' University Drive facility by 20 percent (64% to 44%) from January 2002 (when TPS was launched on 4 West) to October 2006 (*see* Figure 10.6).
- About half of this 20 percent decrease can be attributed to the dramatic reductions in MRSA incidence on 4 West and SICU (these two units contributed a significant number of MRSA infections to the house-wide total). The other half of the decrease has occurred since July 2005 when PD was introduced.
- Hospital-acquired Surgical Site MRSA infection rates declined by 50 percent at VAPHS from July 2005 (when PD practices were implemented) to October 2006.

The following qualitative outcomes have also been achieved:

- The MRSA data and accompanying feedback and feed-forward loops are shared across hospital units, enabling the staff to learn when an MRSA transmission has occurred and to take adequate precautions.
- Weekly unit briefings with MRSA coordinators provide an opportunity for the staff to monitor and investigate new MRSA transmissions and to take individual and collective responsibility for preventing recurrence.
- The ongoing discovery and action dialogues result in a constant flow of new ideas to tackle MRSA.

Reflecting on the VAPHS' Heinz facility, Dr Jon Lloyd observed, "A true cultural transformation has occurred from within—with support from the leadership that demonstrated faith in its people—which manifests itself in a growing sense of ownership among staff and patients of the MRSA problem and their creation



* Obtained 3-48 hours after admission; surveillance cultures excluded; single isolate per patient

Source: VAPHS

FIGURE 10.6 Trend in MRSA rates.

and implementation of hundreds of small solutions." Both Jon and Cheryl Creen emphasized the importance of celebrating stories of staff members' contributions, however small.

A RIPPLE CREATING A TIDAL WAVE

The VAPHS' quest to prevent, control, and eradicate MRSA, supported by early indicators of its effectiveness, has not gone unnoticed at the CDC, at the Veterans Affairs Department in Washington, DC, at the Agency for Healthcare Research and Quality, and with private granting agencies such as the Robert Wood Johnson Foundation.

On August 17–18, 2006, the VA administration held a kick-off event in Pittsburgh to launch its national initiative to combat MRSA entitled "Getting to Zero," with VAPHS as the lead implementing agency (under the leadership of Dr Rajiv Jain). Representatives of the 17 VA hospitals participating in Phase 1 descended on Pittsburgh for this event. The remaining 150 or so VA hospitals across the country will be covered by the national initiative in phase two.

"So what are the remaining challenges?" we asked.

Candace Cunningham, the MRSA prevention coordinator at the VAPHS acute-care facility, said a major challenge was what she called the "not supported by the literature" issue. Hearing Candace's comments, Dr John Jernigan from CDC agreed. "Everyone wants to see a randomized controlled trial before they'll believe something is effective." He then noted that the British Medical Journal has questioned the exclusive dominance of evidenced-base medicine by publishing an article highlighting the lack of randomized controlled trials to support the effectiveness of parachutes in "preventing major trauma related to gravitational challenge."[34] The article concluded with a call to the medical community to "accept that, under exceptional circumstances, common sense might be applied when considering the potential risks and benefits of interventions."[35] And just as one does not need a randomized controlled trial to know that parachute use is a good idea when jumping out of a plane, one might also defer to common sense when assessing the value of increased communication and staff ownership.

Jon Lloyd agreed with the need for a "common sense" approach to MRSA prevention. "You have to respect the process . . . opening the floodgates of communication between staff may not be clinically proven to help prevent MRSA, but it certainly can't be hurting!" Jon then noted that the ideas of such luminary figures as Ignaz Semmelweis[36] and Oliver Wendell Holmes[37] were also met with skepticism in their day.

"MRSA is a great unifier. Every patient and every healthcare worker is potentially affected. . . . Once you start tackling MRSA head on, it's like the genie is out of the bottle—you can't put the genie back in."

Dr Bob Muder added that other hospitals have an 'enlightened self interest' in joining the battle against MRSA. "Many people seem to have an 'aha moment' when they see the preliminary data on how many infections we've

prevented—how many *deaths* we've prevented—at the VAPHS. When people see the data, they become partisans—and once data at other hospitals starts becoming available there will be nowhere to hide—facility managers will start being held accountable. There's no reason other hospitals with the same resources can't do what we've done here. Even from a fiscal, legal or public relations perspective, it's a win–win situation."

IN CLOSING

VAPHS' quest to vanquish a dangerous and devious enemy necessarily requires waging a battle on many fronts. Faith in the local grounded intelligence is essential to navigate the difficult and often unknown terrain. By identifying "home-grown" solutions, making them visible and sharing them widely, the VAPHS was able to expand the solution space and get a cross-section of hospital staff members involved in the fight against MRSA. The struggle continues, but the burden is now carried across more shoulders.

Twenty-five hundred years after his death, the Chinese philosopher, Lao-Tzu, founder of Taoism, makes an appearance. Presiding over an audience of MRSA warriors who seek his advice, he says:

"Go to the people. Live with them. Learn from them. Love them.

"Start with what they know. Build with what they have. But with the best leaders, when the work is done, the task accomplished, the people will say, 'We have done this ourselves.'"[38]

NOTES

1 This narrative documentation effort is supported by the Positive Deviance Initiative at Tufts University, as well as VAPHS. The Plexus Institute, as its President Curt Lindberg does best, helped bring us all together. A special thanks to Dr Jon Lloyd, Dr Rajiv Jain, Mr Michael Moreland, Jerry and Monique Sternin, Curt Lindberg, and Henri Lipmanowicz for their support. Thanks also to all the MRSA warriors at VAPHS, who honored us by shared their experiences and insights. Portions of this chapter draw on an unpublished report, Singhal and Greiner (2007), available at the Plexus Institute website: www.plexusinstitute.org/ideas/show_elibrary.cfm?id=664 (accessed November 11, 2010).

2 Arvind Singhal is the Samuel Shirley and Edna Holt Marston Endowed Professor, and Director, Social Justice Initiative, Department of Communication, The University of Texas, El Paso. Karen Greiner is a Post Doctoral Scholar at the University of South Florida in Tampa Florida. She served as Peace Corps volunteer in Cameroon and was a 2008–09 Fulbright Fellow in Bogotá, Colombia. Both authors are interested in the diffusion of social innovations as well as complexity science-inspired approaches to organizing for social change.

3 VAPHS is part of the US Department of Veteran Affairs (VA), a government agency that regulates and administers all matters pertaining to war veterans,

notably providing them with quality medical care. Some 25 percent of the US population is eligible for VA benefits as veterans, family members, or survivors. The VA's 2005 fiscal year spending was $71.2 billion, including $31.5 billion for healthcare, $37.1 billion for benefits, and $148 million for the national cemetery system. Source: http://www1.va.gov/opa/feature/history/history10.asp (accessed November 11, 2010).

4 Lloyd was previously Chair of the Department of Surgery at Shadyside Hospital and Medical Director of the Pittsburgh Regional Healthcare Initiative. From the first day we met him in Pittsburgh in May, 2006, Jon Lloyd served as our escort, teacher, and connector to VAPHS' staff, patients, and facilities. Throughout the writing of this story, he sent us both pithy and detailed email messages sharing the MRSA struggles and triumphs at the VAPHS, and keeping us in the loop through phone calls. He opened many "doors" for us, and provided insightful "windows" to the nuances, subtleties, paradoxes, and contradictions we observed at the VAPHS.

5 This position is supported by an inter-agency agreement between the Centers for Disease Control and Prevention and VAPHS.

6 As noted previously, the 4 West Surgical Unit on VAPHS' University Drive facility had, since 2001, implemented the Toyota Production System method to reduce MRSA infections; however, this best practice yielded disappointing outcomes when replication was attempted on other units.

7 Heidi Walker was appointed MRSA coordinator for the VA's Heinz facility in August 2005 and worked there until December 2005.

8 Klein E, Smith DL, Laxminarayan R. Hospitalizations and deaths caused by methicillin-resistant *Staphylococcus aureus*, United States, 1999–2005. *Emerg Infect Dis.* 2007; 13(12): 1840–6.

9 Saco R. *Good Companies: organizations discovering the good in themselves by using positive deviance as a change management strategy.* [Dissertation] Paris, France: HEC Paris/Oxford Executive Education; 2005.

10 Jernigan is Chief, Interventions & Evaluation Section Division of Healthcare Quality Promotion, CDC.

11 This section draws upon Papa MJ, Singhal A, Papa WH. *Organizing for Social Change: a dialectic journey of theory and praxis.* Thousand Oaks, CA: Sage; 2006.

12 PRHI and the CDC worked with the University Pittsburgh Medical Center (UPMC) on reducing catheter-related bloodstream infections, which according to Dr Carlene Muto, medical director of infection control at UPMC, was very expensive to treat and had high mortality. The thirty-two hospitals in 10 southwestern Pennsylvania counties that participated in the intervention averaged a 68% decline in infection rates during April 2001–March 2005.

13 TPS was developed by the Japanese auto giant Toyota. Other industrial quality initiatives include Lean and Six Sigma.

14 Saco R, op. cit.
15 Dorsey D. Positive deviant. *Fast Company.* 2000; **41**: 284–92.
16 *See* Chapter 3. See also Sternin J, Choo R. The power of positive deviance. *Harv Bus Rev.* 2000; **2–3**: 14–15. Singhal A, Buscell P, Lindberg C. *Inviting Everyone: healing healthcare through positive deviance.* Bordentown, NJ: PlexusPress; 2010.
17 Zeitlin M, Ghassemi H, Mansour M. *Positive Deviance in Child Nutrition.* New York: UN University Press; 1990.
18 Sternin J, Choo R, op.cit.
19 Sternin J, Choo R, op.cit. Sternin M, Sternin J, Marsh D. Scaling up poverty alleviation and nutrition program in Vietnam. In: Marchione T, editor. *Scaling Up, Scaling Down: capacities for overcoming malnutrition in developing countries.* Amsterdam: Gordon and Breach Publishers; **1999**: pp. 97–117.
20 Pascale RT, Millemann M. Gioja L. *Surfing the Edge of Chaos: the laws of nature and the new laws of business.* New York: Crown Publishing Group; 2000.
21 *See* Sternin, quoted in Sparks D. From hunger aid to school reform: positive deviance approach seeks solutions that already exist. *J Staff Dev.* 2004; **25**: 46–51.
22 *See* Buscell P. The power of positive deviance. *Emerging.* 2004. Aug–Oct: 8–15. Dorsey D, op. cit. Sternin J. Practice positive deviance for extraordinary social and organizational change. In: Ulrich D, Goldsmith M, Carter L, *et al.* editors. *The Change Champion's Fieldguide: strategies and tools for leading change in your organization.* New York: Best Practice Publications; 2003. pp. 20–37.
23 To learn more about these PD experiences, *see* www.positivedeviance.org/resources/wisdomseries.html (accessed November 11, 2010).
Positive Deviance Wisdom Series 1 through 4, published by Boston, Tufts University: Positive Deviance Initiative; 2009. #1. Singhal A, Sternin J, Dura L. *Combating Malnutrition in the Land of a Thousand Rice Fields: positive deviance grows roots in Vietnam*; #2. Dura L, Singhal A. *Will Ramon Finish Sixth Grade? positive deviance for student retention in rural Argentina*; #3. Singhal A, Buscell P, McCandless K. *Saving Lives by Changing Relationships: positive deviance for MRSA prevention and control in a US hospital*; #4. Singhal A, Dura L. *Sunflowers Reaching for the Sun: positive deviance for child protection in Uganda.*
24 This section is adapted from material distributed at an October, 2005 workshop offered by Jerry and Monique Sternin entitled "Social Change from the Inside Out: Addressing Intractable Social Problems through Positive Deviance."
25 Pascale RT, Sternin J. Your company's secret change agents. *Harv Bus Rev.* 2005; **83**(5): 72–81.
26 In June, 2007 Cathy participated in a session on Innovation in Infection

Control at the annual conference of the Association for Professionals in Infection Control and Epidemiology (APIC). The title of her presentation was "Use of gown counts to assess and improve compliance with contact isolation." Commenting on Cathy's initiative, Ira Richardson, Associate Director for Patient Care Services at the VAPHS, said: "Cathy is taking her work to the next level. Usually, at APIC conferences, one sees RNs present, but rarely LPNs like Cathy. It is impressive to see how much Cathy has grown, professionally."

27 Ellingson L. *Communicating in the Clinic: negotiating frontstage and backstage teamwork.* Cresskill, NJ: Hampton Press; 2005. p. 143.

28 Nonetheless, Cheryl works within the constraints of the VA system. She acknowledges that keeping abreast of government regulations is challenging. But, she adds, that it's important that the staff know the regulations. This may mean having to explain "why a seemingly good idea can't be implemented—at least, in the short term."

29 Broekstra G. An organization is a conversation. In: Grand D, Keenoy T, Swick C, editors. *Discourse and Organization.* London: Sage; 1998.

30 *See* Suchman AL. A new theoretical foundation for relationship-centered care: complex responsive processes of relating. *J Gen Intern Med.* 2006; **21** Suppl. 1): S40–4.

31 Lipmanowicz H. *Buy-in versus ownership*, unpublished document shared with the authors via personal communication.

32 Lipmanowicz H, op. cit. p. 2.

33 Parsons T. *The Social System.* Glencoe, IL: Free Press; 1951. p. 437.

34 Smith GC, Pell JP. Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials. *BMJ.* 2003; **327**: 1459–61.

35 Smith GC, Pell JP, op. cit. p. 1460.

36 Semmelweis introduced the practice of hand washing with chloride of lime to block transmission of the disease.

37 Holmes authored the essay *Contagiousness of Puerperal Fever* in 1843 which concluded that Puerperal Fever was transmitted by healthcare practitioners.

38 *See* http://thinkexist.com/quotes/lao_tzu (accessed November 11, 2010).

Commentary: Veterans Administration Pittsburgh Healthcare System

As we read in this case study, methicillin-resistant *Staph aureus* (MRSA) infections claim 100 000 lives every year. The fact that the bacterium is tenacious and difficult to treat is only half the story. The other half, which is arguably more critical, involves self-propagating patterns of thinking and acting among healthcare professionals: initially the inappropriate prescribing of antibiotics that fostered the emergence of drug-resistant bacteria, compounded by persistent inattention to the everyday behaviors that spread bacteria from one person to another *in healthcare facilities*. But there may be an even deeper level.

For many decades, there has been a general belief that a certain low postoperative infection rate is normal, even inevitable, and is therefore acceptable. Efforts at prevention were focused entirely upon the more heroic realm of invasive procedures with clinicians trying to be meticulous in their practice of sterile technique. But humdrum activities like touching patients, hand washing, passing food trays, and using the same stethoscope on one patient after another were of little interest, and the associated infection control practices were inconvenient. Infection control personnel were often dismissed if not derided for even raising these topics. This pattern of meaning—that hospital-acquired infections are a normal part of doing business—may be the single biggest factor that has enabled the MRSA epidemic to continue. And so 100 000 more people die each year.

The MRSA team at the Veterans Administration Pittsburgh Healthcare System was artful, persistent and effective in trying to change these toxic patterns. The story of its work exemplifies every one of the major principles in this book.

First, complexity: at the heart of the initiative was a process of fostering mindfulness of the patterns people were creating in each moment and attempting to alter the problematic ones. Using bags of macaroni to make the number 100 000 visible—and then translating that into lost lives—disrupted the pattern

of complacency and acceptance. The use of Glo-Germ helped with this, too, vividly demonstrating how everyone was part of the network of hand-to-hand transmission. The project depended upon emergent design: following the direction of the group as more and more people got involved and contributed their ideas.

At many points in the story, we see small accidental disturbances cascading to become transformational patterns. The first person to be in charge of the MRSA prevention initiative happened to be familiar with the Toyota Production System; using those methods he demonstrated that lowering the infection rate is indeed possible. Then, one of the MRSA Prevention Coordinators happened upon an article about Positive Deviance, which he read only because it described a project in Vietnam where he had served decades earlier. That chance encounter altered the direction of the entire project. A physical therapist asked to receive the list of MRSA-positive patients, prompting others to do likewise, thus engaging lots of people who never thought about MRSA before to start noticing and modifying potential paths of transmission in their work processes.

Second, this story is positive psychology *par excellence.* As we saw in Chapter 3, Positive Deviance presumes and calls forth the capacity of a community to solve its own problems; the Pittsburgh VA was no exception. Experts did not provide answers; their role was to coach internal leaders about processes of engagement, discovery, communication and rapid implementation. By having both the solutions and the leadership come from inside the community, PD supported the autonomy of the VAPHS staff and highlighted their competence. Instances of MRSA transmission were used as occasions for learning and further innovation rather than for blaming and shaming, keeping people constructively engaged and fostering their creative thinking.

Third, the story demonstrates relationship-centered process. In Discovery and Action Dialogs, floor-wide social events and weekly MRSA briefings, people were invited to join as partners, across all occupational and professional roles, across all levels of hierarchy, staff and patients alike. Everyone's perspective was valued. There was a deeply felt understanding that everyone together was much more powerful than anyone alone; indeed, it would take everyone to solve this problem. Positional leaders fought down their urge to give directives, recognizing that a shared sense of ownership and decision-making would ultimately lead to greater effectiveness and efficiency.

This case study illustrates an important dimension of change management that may seem paradoxical—the intentional use of organizational structures to foster emergence. Recalling from Chapter 2 that diversity and responsiveness are the key factors that foster the emergence of new patterns (innovation and adaptability) we can appreciate the value of the relational infrastructure that the Pittsburgh VA staff created. They designed forums that regularly brought together in conversation patients, housekeepers, physicians, nurses, van drivers and everyone else, calling forth the full diversity of the organization—the difference that seeds new patterns. The forums were structured to help people

listen to each other, celebrate each others' ideas, and build relationships and trust; all this enhanced responsiveness, allowing new patterns to evolve and spread.

The project leaders could not command people to innovate, but neither were they passive. They could and did create a fertile environment that unleashed creativity. They developed open, enabling structures that supported emergence, dissemination, and widening engagement. Their strategy of "supported emergence" succeeded: data presented in the chapter show a 20% decrease in positive MRSA surveillance cultures at the acute-care hospital and a 50% reduction in surgical site MRSA infections. By 2009, the entire VA system in Pittsburgh had achieved a 60% reduction in all MRSA infections.[1]

One last point for us to consider: this case study provides our first look at the Toyota Production System, more widely known now as Lean Production. While TPS was very successful in reducing MRSA infection in the intensive care unit, the project leaders found it to be too expert-driven and too costly. Later in the book (Chapter 13) we'll have a chance to explore a different and more relationship-centered implementation of TPS, so you might want to suspend judgment on this methodology for the moment. For now, let's celebrate the VAPHS staff and their outstanding and inspiring application of Positive Deviance.

NOTE

1 Singhal A, Greiner K. Small solutions and big rewards: MRSA prevention at the Pittsburgh Veterans Hospitals. In: Singhal A, Buscell P, Lindberg C, editors. *Inviting Everyone: healing healthcare with positive deviance.* Bordentown, NJ: Plexus Press; 2010. p. 75.