

*This is not about the people who work in hospitals. This is about the fact the processes in hospitals are so broken that there really isn't any way for people whose good intentions are clear to impact the system positively without really going through the stages of process improvement.*

*Sister Mary Jean Ryan, FSM, RN, President and CEO,  
SSM Health Care*

## CHAPTER 6

### **SYSTEMS THINKING AND CONTINUAL PROCESS IMPROVEMENT**

#### **Systems and Processes and the Delivery of Care**

The most important thing the executives at SSM Health Care and PRHI learned was that any hospital or large organization is a single system. To change and improve such a complex system, the people in an organization need to learn a revolutionary new mindset that gives them new eyes and a new understanding of their work, their customers, and their fellow workers.

This mindset is called systems thinking. It is a mindset that needs to be learned consciously. In our task-oriented society, we tend to be habitual, unconscious, single-event thinkers. Such a mindset may have sufficed in managing the details of a hospital in an earlier, simpler time. But it is sorely inadequate in today's complex and constantly changing culture.

Throughout our good news story about these pioneering healthcare facilities healing themselves, we cannot stress too much the importance and power of the new mindset called systems thinking. A healing transformation happened in these institutions—not because employees learned some new methods or practices or because everyone started working harder—but because the employees learned to think in a new way.

This new way of thinking, gave them new eyes to see things they had never noticed before. With this new mindset, they could also recognize ways to make improvements they never imagined before. Suddenly they could identify interconnections between people and tasks they had not noticed. Systems thinking gave them an expanded

perspective for looking at processes and procedures they had been performing for years. It allowed them to create new ways to make their work more efficient and effective—again and again. They learned to grasp entire processes and whole systems, instead of just lists of department responsibilities and job descriptions. They learned to observe not only the obvious actions of people but also the more subtle and intangible interactions that occurred among them—and that made all the difference.

The systems thinking mindset is the primary source of the healing transformation in these healthcare organizations. Do not be distracted by new methods or techniques for improvement—like using flow charts or the PDSA cycle. To use these tools effectively requires systems thinking and “new eyes” to see what needs to be improved and how best to make that improvement.

Later in this chapter, you will hear how the staff at PRHI used this new way of thinking to develop *learning lines*. Here, using a small part of the unit as a laboratory the staff can formulate and test ideas for possible improvements, then continually refine those improvements until they can be applied throughout the entire unit.

We also tell the story of how in an SSM facility doctors and nurses used systems thinking to manage the blood sugar levels of critically ill patients thereby saving many lives and much money.

Finally, we close the chapter with a fascinating story of how an SSM hospital used systems thinking and its mandate for continual improvement to revolutionize services in an emergency room, so that today more than 90 percent of the patients who come to the emergency room without a life-threatening accident or illness are under active care within 30 minutes. Those with life-threatening problems are under active care within 30 seconds.

## **Systems Thinking**

Few people truly understand the mindset called systems thinking and how different it is from single-event thinking. People commonly assume that a system—a hospital, for example—is the sum of its parts; that is, each one doing his or her job, giving their best efforts with enthusiasm and commitment will create excellent health care. Managers who make that assumption are not systems thinkers but single-event thinkers. Such thinking, even with dedicated employees, has led many an organization, including hospitals, down a path into inefficiency and ineffectiveness. An effective system will naturally be more than the sum of its parts because of the quality of the *interactions* of the people with each other and the machines they use. Systems thinkers quickly become aware how their work fits into the system—e.g., the hospital—and the processes, which make up the system.

Eunice Halverson, Corporate Vice President of SSM Health Care's Quality Resource Center, explains this big difference, when she talks about a process, which is simply systems language to describe a group of people working together to produce a service or product for a customer.

When you look at a process you can actually look at the steps of the process that make up the whole. For some reason, if we are task oriented or single-event thinkers, our brains don't see that way, don't work that way. It's kind of like we are each working in a silo. I'm going to do this task while others might be doing a couple of other tasks at the same time. But we don't seem to see them as tasks that integrate with one another, that interface.

*Eunice Halverson, Corporate Vice President  
Quality Resource Center, SSM Health Care*

On the contrary, a systems thinker sees an organization such as a hospital, not as the sum of its parts but primarily as the *product of its interactions*. A system is not measured merely by what people are *doing individually* but how well they are *working together*—interacting and interfacing. It is the quality of their interactions that makes an organization greater—or lesser—than the sum of its parts.

A good example of a system is your human body. It is not just the sum or accumulation of its parts, because the whole body is greater than the sum of its parts. What makes the whole greater are the *interactions* of the parts.. For example, your hand alone does not write a letter, slice a tomato, brush your teeth, work the TV remote or turn the steering wheel of your car. Every one of those activities requires the interaction and precise coordination of fingers, wrists, arms, shoulders, spine, and eyes, plus a lot of simultaneous neuronal firing in the brain stem, limbic system, and the cortex. It is your whole body—the system—that writes, slices, brushes, pushes and turns.

In any organization as in any organism, there are many more interactions than actions. While actions are usually quite visible and measurable, interactions are, for the most part, intangible and invisible. Interactions happen in a realm of “between”—in that intangible space between the parts or people. Thus, as a whole, a system is for the most part something invisible and intangible. In fact, it is important to remember that what really makes it a system powerful and gives it wholeness is mostly invisible.

### **A Shared Aim Unifies and Integrates**

What makes a system a system and gets all of its parts interacting efficiently and effectively is that all of the parts have a *shared aim*. For example, the shared aim of all your bodily parts is to keep you healthy and alive. Unless everyone in a complex social system, like a hospital,

agrees and commits to a shared aim, there cannot be a system. They are merely a group of people working side by side with many different aims or purposes.

It is also true that each employee or member of a system may have his or her own personal agenda for working in this organization. So, if a system is to be greater than the sum of its parts, its shared aim needs to be so desirable, powerful, stimulating, and inspiring that it embraces and helps fulfill each one's personal agenda. For a hospital, the only possible unifying aim is to totally focus on the health and care of the patient.

Therefore the first order of business in creating a successful complex social system is to find a powerfully inspiring aim that everyone is ready and willing to commit to. Once this shared aim is clear to everyone, then, and only then may the processes or tasks of various teams be studied and redesigned to improve the interaction of people and the flow of work. The criterion of improvement is: Does this change further the organization's shared aim or not? In the case of hospitals, the criterion might be: Does this change in a process promote perfect patient care, or not?

### **Systems, Subsystems, and Processes**

Like any large complex social or manufacturing organization, a hospital as a healthcare system is made up of many sub-systems, and each of those sub-systems is made up of many processes. The easiest mistake to make is to think of any of those hospital sub-systems or processes as independent of any other in the whole system.

According to Raymond LeBoeuf, CEO of PPG Industries in Pittsburgh and strong supporter of the Pittsburgh Regional Healthcare Initiative,

Process improvement is key to health care just as it is key to all business success. Everybody involved in the process must, first of all, know there's a process. That sounds simple but I think a lot of times people think that they're a part of a group of individual contributors that act independently of one another. But that isn't the case. There is connectivity in what's being done, and in hospitals and in medicine, that connectivity must be strong. There is a mosaic in medical care that needs to be understood by all of those involved. They must understand what each person's role is, not only their own, and what everybody else is depending on throughout the value chain here in hospital care.

Strictly speaking, there cannot be an organizational system unless each and all of the sub-systems, processes and people involved in them are agreed upon *a single shared purpose for the whole system*, and all are committed to it above any other goal, purpose, or aim. Of course, individuals in the organization have their own personal agendas—what they want out of life—and must remain aware of those agendas as well as the shared aim of the entire system. The only shared purpose large enough to encompass all parts of an organizational system and the people in it is *pleasing or satisfying the organization's customers*. In the case of a hospital, its customers are its patients.

Paula Friedman, a systems improvement vice president at SSM Health Care, adds,

So much of health care has been task oriented. It's fixing this issue or that issue. Being task oriented doesn't understand the context of the whole patient view—the patient perspective—how what we do impacts patients personally, their families, and their lives. It's that compassionate difference in how we deliver that care as well as the tactical things that we do each day.

Only when patient care and safety are uppermost in the minds of the hospital staff can they predict whether a proposed change or redesign in a sub-system or process will be an improvement. People at SSM Health Care and PRHI, committed to continual improvement of their processes, learned always first to ask themselves, “Will this change help improve patient care and safety? Will it free up doctors, nurses and other healthcare personnel to spend more time caring for patients?” For each of the two hospital systems, this perspective, above all, has been the core of their successful transformation.

The leaders began to understand that their healthcare institutions had become sick because they had lost sight of their true purpose, the care and safety of patients. The problem wasn’t the people who worked in hospitals. The problem was the system, its lack of a shared focus and its defective processes. Here is the story in their own words.

Many things you do because that’s the way you’ve always done them. In health care, unfortunately, we tend to do that sometimes, because that’s the way we’ve always done them. So, we took our blinders off and said, “That may be the way we’ve always done it, but how do we shorten these steps? How do we get from here to where we want to be?” For example, how do we find a bed for a patient quickly? And by doing that, we changed our process.

*Maggie Fowler, Vice President of Patient Services  
SSM St. Joseph’s Health Center*

We were like a lot of organizations that in trying to fix a problem we added staff. That was always the first thing we came up with. We said, “We could move this process along if we just added another nurse over here, or we just added another technician over here, or if we just put another room over here.” What we learned when we spent that year developing quality systems is that our processes were flawed. The last thing we do now when we want to solve a problem is to add people. The last thing we do is add resources. Instead, we look at our design and we improve our design.

*Kevin Kast, President,  
SSM St. Joseph’s Health Center*

So much of organizational policy is doing things because that’s the way we’ve always done them. Now, we really assess why we do the things that we do. Everything that we do now, I would say, is more intentional than ever before. We understand the questions—Whom do we serve? What do they want from us? How do we know?—and we

put that into place with defined measurements. So, it's not just delivering exceptional health care but understanding how we define it and what that means.

*Paula Friedman, Vice President, Systems Improvement,  
SSM Health Care*

What we've accomplished over the last 13 years is to have people truly recognize that the delivery of care is a process. It may not be as rigid as building an automobile but it is still a process. Now we collect information on everybody that comes through our front door or through our ER. We analyze that information. We take that analysis and draw some conclusions from it; based upon those conclusions we design a treatment plan. We treat the patient according to that plan.

We evaluate the results. If the results have achieved the objectives we have established, then the patient is usually discharged to another level of care. If not, we go back and reassess it. That's basically the Plan-Do-Check-Act cycle we follow.

*William P. Thompson, Senior Vice President,  
Strategic Development, SSM Health Care*

One of the hallmark methods for quality improvement is called PDSA (Plan-Do-Study-Act) or, as Thompson called it, PDSA, that is Plan-Do-Check-Act. Before a process change is implemented throughout an organization, it is tested by a PSCA cycle. The test begins with a well laid-out Plan, which is then tried or tested on a small scale (Do). The results of the test are then Studied or Checked, and perhaps modified. Finally, the newly or re-designed process is put into place in the system (Act). The PDSA cycle may be repeated again and again, since every process is open to continual improvement.

We believe that all work is part of a process and because of that we can improve it. And we believe that people are not the cause of the issues but rather broken processes that we need to fix.

*Eunice Halverson, Corporate Vice President  
Quality Resource Center, SSM Health Care*

There is not one hospital across the country that doesn't have a process that they can improve.

*Brenda Peterson, RN, Patient Access Director,  
SSM St. Joseph's Health Center*

And so all of the work that we do in caring for the patient is a process. And that's how it is in manufacturing also. So, if we look at that process and flowchart the steps in the process, then we can find ways to reduce the time. We can eliminate the waste, and we can get better care to the patient by making it a better process.

*Eunice Halverson, Corporate Vice President  
Quality Resource Center, SSM Health Care*

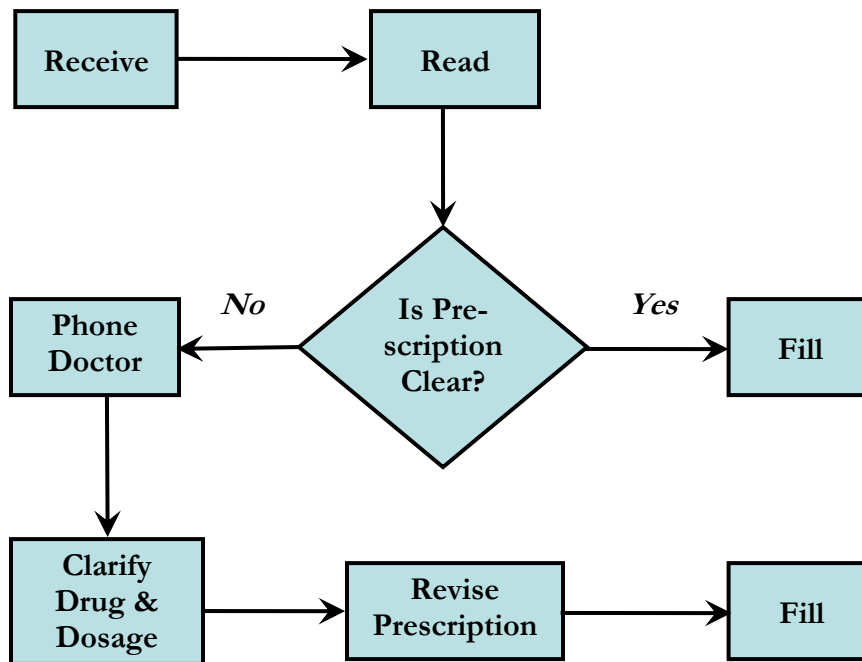
A *flowchart* is a sketch or map of a process or a system that graphically describes the flow of activity from beginning to end. Each step in the process is boxed and labeled, and arrows indicate the direction of the flow of activity from one box to another. Some flowcharts are rather simple because the process they describe is merely a series of consecutive steps, one following the other, from beginning to end. Most processes, however, are quite complicated, involving branching arrows and feedback loops, so their flowcharts reflect their complexity. Creating flowcharts is an often-used skill learned by every systems thinker.

For example, in the work of the pharmacy one apparently simple process that could be flowcharted is receiving a doctor-written prescription, reading it, and filling it. From start to finish, its flowchart sounds like an easy three-step process. The pharmacy team may at first draw it on a chalkboard in this elementary form:

However, any pharmacist will point out that there are many missing steps in this flowchart. For instance, during the reading step: what if the doctor's handwriting is unclear? What if two drugs have almost the same spelling and you're not sure which one the doctor wants? Or what if you're not sure whether the doctor wrote a six or a zero in one place? Or what if a decimal point is unclear, and you're not sure whether the doctor wanted the dosage to be 1.0 cc. or 10 cc?



So that the pharmacist may catch any near misses when written information is unclear, the team may have to add branching steps to their flowchart, such as telephoning the doctor, clarifying the drug or dosage, and emending the prescription.



Again, in the Fill step, the pharmacist points out there are other considerations. For instance, it is essential to verify the patient who is to receive the medication, since often there may be another patient with the same name in a large hospital. Therefore, a process for verifying the patient must be put into the flow chart. Also, if this is a new drug for this patient, or a new doctor prescribing a medication, the drug must be checked for possible interactions with other drugs the patient is currently taking. If there a question arises, perhaps more phone calls to doctors may be required, which will require for another branching process in the flowchart. And so on.

Eventually, a more complete flowchart is drawn that fills in the missing steps, is designed to catch any mistakes, ensures that the shelf supply of the drug is not running low, ensures security and safety for any dangerous drugs, and provides the drug in proper form (vial, tablet, liquid, syringe, etc.) In many cases, processes like filling a prescription that may appear simple at first may ultimately require dozens of steps and go off into many branches before the process is actually completed and the medication is delivered to a patient properly and safely.

### Just Two More Definitions

In this book, you are going to come across two words that are quite common in every day conversation, “system” and “complex.” These words are used in a special, technical sense.

Whenever the word “system” appears, it refers to an interacting arrangement of things, ideas or people that forms not only a simple

union or unity, but also an interacting whole that can be greater than the sum of all its parts.

In this book, the word “complex” is almost always used as an adjective to identify a certain kind of system. A "complex system" refers to a special category of systems, namely, a system of interacting relationships involving things, ideas and people *that is constantly changing or re-adapting itself in response to internal as well as external forces.*

An ocean, a human body and the weather are examples of complex systems that are constantly changing or re-adapting themselves in response to internal as well as external forces. A hospital is, of course, another example of a complex system.

A complex system must never be mistaken for a *complicated system!* The words “complex” and “complicated” have significantly different meanings in systems language.

A "complicated system" consists of an intricate combination of interacting parts whose components work in a predictably fixed pattern. An auto, a computer and a camera, are examples of complicated systems. Once you have designed and built an auto, computer or camera, you can assemble the same set of parts over and over again and, predictably, get the same working results. Most importantly, none of these complicated systems keeps adapting and re-inventing or changing itself as it functions. Consistently predictable behavior of a complicated system, like a computer or a camera, is one of the things you are paying for when you buy it. Such systems, though intricate and complicated, should be dependably repetitive in how they work.

### **Add a Human Being**

However, in most cases, when you add a user to any complicated system like an auto, computer or camera, it usually becomes a complex system. Once you add people to almost any mechanical or electronic system, it becomes complex, precisely because humans have free will and in their interaction with that auto, camera or computer they may begin adapting and changing the ways they use it.

As highly complex systems, hospitals involve hundreds of people with free will using hundreds of pieces of complicated machinery and equipment and following hundreds of processes. You can imagine what may happen when each of these people begins adapting and changing the way they use equipment and the ways they interact with each other.

There are complex systems such as the ocean, the human body and the weather that are still so incompletely understood that we may never feel capable of knowing of or dealing with many of the behaviors and/or changes they manifest. The forces and/or components that make up an ocean, the human body or the weather produce a system of interactive

relationships that are continuously in a state of change—some easily observed, some not. If the changes are slight, there are usually no major problems to deal with. However, when larger and more complex systems, like hospitals or oceans or weather patterns, are not sufficiently understood, the results they produce, even ones that are unintended, can be devastating.

### **Constant Awareness**

When attempting to manage a complex system like a hospital, any management approach will usually work for at least a while, but only for a while. This is inevitable because the interacting parts and relationships that make up that system are always in a process of adapting to new forces—new equipment, new regulations, new employees, new diseases, new costs, new expenses, etc.—that result in new problems, bottlenecks, conflicts and confusion requiring a new management approach. Complex system problems can only be solved for a while. And only then by a constant awareness and analysis of the changes that have produced the newest problem needing a new resolution.

National health care is an immensely complex system. Within that immensely complex system each of the more than 6,000 hospitals in this country forms its own local complex system. To solve the problems of those local complex systems, people in them must be adaptable and willing to change—continually! Since people do not like to change—no matter what they say—getting them to change continually will never be easy. However, when the personnel in the hospitals we studied learned the new mindset called systems thinking, they not only found it easy to change continually, they also discovered the joy of doing it. They saw that by continually adapting the ways they worked together they improved their ability to care for their patients and, at the same time, made their own work easier and more satisfying.

In the next chapter, hospital staffs explain how they successfully practiced systems thinking.



### **SOME THINGS TO REMEMBER FROM THIS CHAPTER**

- ◆ Any hospital or large organization is a single system.

- ◆ To improve this changing, complex social system, the people in it need to learn and practice systems thinking
- ◆ Systems thinking, remember, teaches people to recognize problems and to design improvements.
- ◆ It is a new mindset that gives people a new understanding of connections, work, customers and fellow workers.
- ◆ This mindset must be consciously learned, because most people are habitual and unconscious non-systems or single-event thinkers.
- ◆ In systems thinking, looking for improvement never ends.