

Habits of a System Thinker

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In this last lecture on systems thinking, I will focus on the habits of a systems thinker. Systems thinking leaders in the clinical laboratory develop specific habits to help them provide accurate and reliable clinical testing, which ultimately contributes to patient-centered holistic care. These habits provide ways of thinking about how the clinical laboratory works and how actions taken impact results seen over time. The habits foster problem-solving and encourage questioning. Each habit can be applied to improve clinical care.

A systems thinker seeks to **understand the big picture** and observes how elements within systems change over time, generating patterns and trends. This person intentionally changes their perspectives to increase understanding. We all operate at different levels within the clinical laboratory (at the top, middle, or bottom). And each of those levels causes us to look at issues through different lenses. If you're at the top of an organization, you see things one way, when you're in the middle you see it another way. At the bottom of an organization, things look very different. So, systems thinkers know this and they are willing and able to consider all these viewpoints. A systems thinker also observes how elements within systems change over time to generate patterns and trends. They recognize that a system's structure has behaviors that change over time. A systems thinker is able to identify complex cause and effect relationships. So, systems thinkers are able to make meaningful connections within and between systems.

Another habit of a systems thinker is that they consider an issue fully and resist the urge to come to a quick conclusion. While linear thinking is simple and easy, it is not necessarily effective when you apply it to identify problems in complex systems. When seeking to address a laboratory problem, consider how linear versus systems thinking could differently impact your interpretation of the problem and your subsequent response to the problem. To institute change, systems thinkers use their understanding of system structure to **identify possible leverage points**. A colleague of mine was asked to start an initiative in our department. She asked me if I thought she should start with the faculty, so that they would buy into the project, before presenting it to the chair and deans. I advised her to start at the top, because that is where the leverage often is—with what's called "gatekeepers". Many of the people at the top want to approve projects or initiatives at the beginning so that they aren't surprised by the direction of the project or the recommendations that come out of the initiative. It's important to understand where leverage is in order to have the smoothest path towards your goal.

Clinical laboratorians at all levels, are persuaded by data. So, in some cases, a leverage point could be the generation of data showing that a different laboratory test is superior to the currently used test. Or, approach A is better than approach B at solving a laboratory error. Showing compelling data to leadership could be leveraged for adoption of the new test in the laboratory. So, systems thinking can help you consider different ways to leverage changes to the system.

Another habit to consider is both **short- and long-term consequences of actions**. Changing one part of a system almost always impacts other components within that system. So, system thinkers must consider and be aware of unintended consequences. Referring to the prior lecture, where clinical laboratory staff were pulled from other laboratories to shore up COVID testing, the unintended effect was that the hematology, genetics, chemistry and microbiology laboratories became under-staffed and so the scientists in these labs became over worked and stressed. So, managers need to think about the unintended consequences when we make changes to systems.

Systems thinkers consider and **test their assumptions**, identifying which lenses they are seeing a system from (top, middle, or bottom) and the interconnected nature of complex systems.

Peter Senge has some advice for practicing systems thinking. First, there are no right answers—these systems are far too complex to have a single right answer. Second, you can't divide a complex system in half—systems thinking must look at the whole and this usually takes a team. Third is the appreciation that it is unlikely that root causes will be closely related in time and space. Sometimes we inherit problems caused years ago, based on historical management decisions. Beware of the easiest, fastest solution to a problem, which, while tempting, is almost never the right solution. Also, resist shifting the burden to other systems. Remember the COVID-testing example. Fourth, treat all parts of the system with respect. This will sustain your long-term partnerships and maintain possible leverage points for the future.

In summary, systems thinking is an enormous topic with many different perspectives, especially in the highly complex clinical laboratory where we have the intersections of virology, microbiology, chemistry, hematology, informatics, genetics, and pathology.

Let's finish this lecture with this quote from another key author on systems thinking, Barry Oshry. "Systems thinking is a realistic way to approach the management of organizations and an essential tool in our personal management toolbox."