

Vertical versus Lateral Thinking

By James S. Hernandez, MD, MS, and Prathibha Varkey, MBBS, MPH

Physician leaders operate in a realm of uncertainty and guide complex adaptive health care systems. Managed health care, compensation-based guidelines and the need for cost-effective systems fueled the necessity to deliver value-based, high-quality patient care.

The need to better understand complex systems is especially critical in light of the magnitude of medical errors as noted by the Institute of Medicine.¹ The challenges faced in today's health care organizations are immensely complicated, which often necessitate sophisticated and non-linear thinking and solutions.

Does medical training impede the ability of physicians to resolve leadership challenges? Traditionally, physician leaders have depended on reasoning and logical/sequen-

IN THIS ARTICLE...

Traditional medical training may actually impede a physician's ability to solve complex problems because it is based on vertical, linear and traditional thinking.

tial thinking to solve organizational problems.

As described by Hauser, this process usually consists of "thinking that proceeds in a stepwise fashion applying specific rules in order to reach a definite goal."² It is linear and left-brained, selecting only what is relevant and "correct" to achieve a goal. This traditional way of thinking is referred to as "vertical thinking."³

Much of the time that is spent in undergraduate and graduate medical education cultivates this form of

Table 1

Vertical vs. Lateral Thinking

	Vertical Thinking	Lateral Thinking
Linear	Yes	No
Pattern	Develop an existing pattern	Restructure an existing pattern
Direction	Stepwise and methodical	Multidirectional and creative
Uncertainty Tolerated	No	Yes
Rewards for	Depth of knowledge	Breadth of knowledge
Restricted by relevant information	Yes	No
Novel approaches welcomed	No	Yes

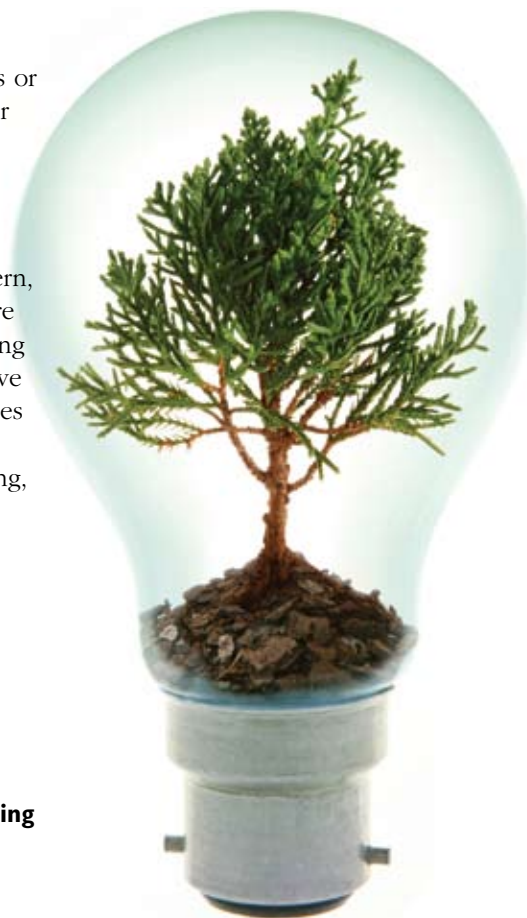
thinking. Vertical thinking rewards the depth of our knowledge. We believe that it produces physicians who are capable of making correct decisions under ambiguous circumstances, leading to the rigorous development of analytical, sequential thought processes that enable literature-supported, evidence-based decisions. This process of reasoning often serves well for scientific research and for the further advancement of the medical and scientific disciplines.

On the other hand, “lateral or horizontal thinking” often used by successful leaders demands a breadth of knowledge and skills that requires an understanding of complex systems.³ This form of creative thinking incorporates reasoning and imagination. By adding imagination to reasoning abilities, new ideas are born. This form of thinking is not

bound by logic, external demands or goals. It does not follow the linear direction of vertical thinking and it is not confined to left-brain dominant thinking.

While vertical thinking seeks to develop an existing pattern, lateral thinking seeks to restructure the existing pattern. Lateral thinking is a step-by-step method of creative thinking with prescribed techniques that can be used consciously.

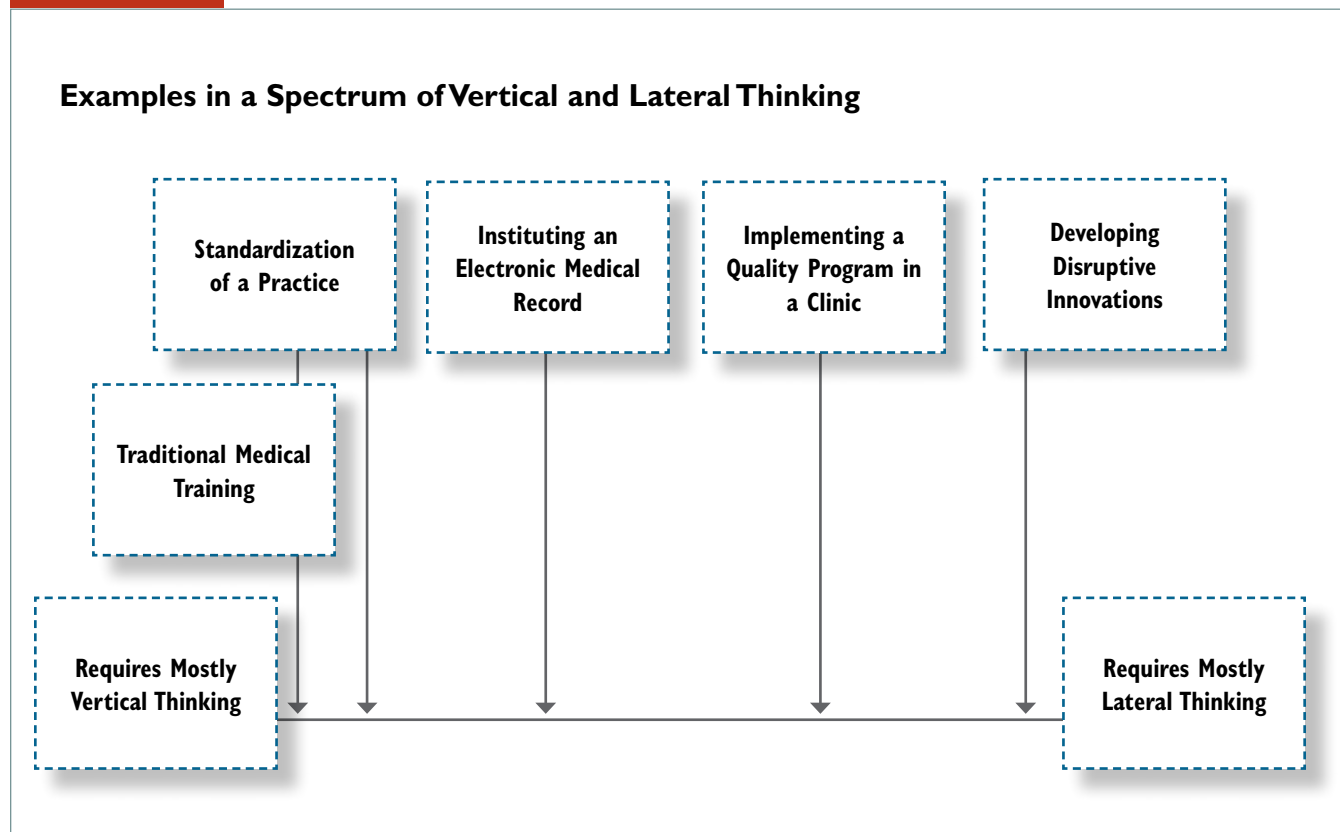
As opposed to vertical thinking, lateral thinking tries to identify different directions of solving a problem. It is not sequential, it is



By adding imagination to reasoning abilities, new ideas are born.

Figure 1

Examples in a Spectrum of Vertical and Lateral Thinking



not restricted by relevant information, and it does not have to be correct. Uncertainty and novel approaches can be terrifying to physician leaders who have been reinforced to find the “right” answer and to succeed all the time.

Some of the techniques of lateral thinking include challenging labels, search for alternatives, fractionation, exposure from other fields and reversal.⁴

Challenging labels requires reframing and questioning the root causes of the problem to be solved.

A search for alternatives helps leaders go beyond the apparently obvious solutions, akin to generating a differential diagnosis for a disease.

Fractionation involves the technique of breaking a complex problem into discrete subsets, and exposing novel solutions or a bundle of solutions to the issues at hand.

An exposure from unrelated fields can aid creative problem solving by using best practices in other fields such as mathematics, engineering and informatics.

Some of the concepts of lateral thinking parallel the complexity theory,⁵ which states that complex adaptive systems, composed of a network of agents, have significant interaction among its various building blocks. Hence, small changes within or outside the system can lead to major changes to the overall team, while large changes can make very little difference.⁶

As physician leaders, the focus in such complex medical systems is to define the vision of the organization in order to enhance the productivity of front-line microsystems, rather than to try to plan out their every little strategy.⁷

Traditionally, institutions turn to the most skilled clinicians and researchers to fulfill leadership roles. Since these physician leaders usually use vertical reasoning in their previous endeavors for success, they

often resort—at least at the start of their leadership career—to this approach to solve complex business and operational concerns.

Such thinking may result in potentially significant failures, low employee morale and financial losses for the organization. Training in systems thinking, complex adaptive systems, quality process improvement and leadership are some of the ways to mentor new physician leaders to cultivate lateral thinking.

It is entirely possible that there is a spectrum of thinking from almost pure vertical thinking to almost pure lateral thinking and that our solutions will depend on the nature of the problem in a complex system.

We suggest that effective leadership in complex health care systems will require both traditional/vertical medical training and lateral/complex thinking strategies to optimize effectiveness as physician leaders.

If physician leaders fail to adequately and systematically develop and implement lateral thinking skills in problem solving, they may fail to solve complex systems issues adequately and effectively.

Systematic training in the application of lateral thinking and complexity theory may assist physician leaders early on to develop effective innovative solutions to complex challenges in the evolving health care system.



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