Lean: Targeted Therapy for Care Delivery

Chadi Nabhan, MD, MBA; Gregory Horner, MA, CSSBB; and Michael D. Howell, MD, MPH

Advances in cancer care have reached unprecedented milestones, but these achievements come at significantly high costs. Disorganized and uncoordinated care can harm patients and contributes to unsustainable expenses. The CMS Innovation Center is addressing these issues with financial incentives under the Oncology Care Model (OCM) umbrella that aims to provide higher quality and more coordinated oncology care at a lower cost to Medicare beneficiaries receiving chemotherapy.

The way that oncology care is organized influences both outcomes and expenses. Although a definitive answer on the ideal care delivery model is uncertain, the Lean approach is an increasingly popular strategy to delivering healthcare. Lean management is an approach to running an organization that supports the concept of “continuous improvement”; a long-term approach to work that systematically seeks to achieve small, incremental changes in processes to improve efficiency and quality while reducing cost and waste.

The Lean approach did not originate in healthcare and may not be the best way to improve the care of complex oncology patients; however, it may be the best method that exists today. Given the challenges oncologists face today, they should be familiar with Lean and consider how the principles and methods can help their practice.

What is Lean?

Some have asserted that Lean is rigid, unyielding, and degrading for providers, equating it to Medical Taylorism, but this interpretation misunderstands historical facts and conflates 2 approaches to improvement that could not be more opposed. In fact, the purpose of Lean is to create value for patients through 2 key principles: continuous improvement and respect for people. It pursues continuous improvement of daily work with patients, and has as its primary focus an empathetic consideration of the value of a person’s time and talent, which can range from working at the highest capability of the oncologist and support team to recognizing the value and limitations of a patient’s time. Recognition of value combined with Lean methods leads to a culture of continuous improvement with patients at the center of every change.

Establishing a Lean culture requires understanding value as well as organizational and cultural transformation; this includes buy-in from senior leadership, agreement on acquiring new habits, and migration from the status quo. It also requires the ability to look critically at one’s practice to identify defects and opportunities to improve. Overall, Lean aims to improve quality, reduce cost, increase efficiency, and minimize variability. In the history of oncology, we have not felt the urgent need for these principles like we do today.

What Every Oncologist Should Know About Lean

Lean Judges From the Patient’s Perspective

In healthcare, value is simply health divided by cost. Lean applies this principle to processes of care, categorizing each step of the process in terms of whether it is value-added (vs waste) from the patient’s point of view. In essence, many steps in the journey of patients’ care do not add tangible value to their experience. To that end, the definition of value in Lean is: (1) the process must transform the product or service, (2) the function must be done right the first time, and (3) the customer (eg, patient) must be willing to pay for it.
Consider the case of Mrs. X, a 46-year-old woman with breast cancer arriving for her chemotherapy appointment. Her (fairly uneventful) clinic visit is shown in Figure 1. In total, her clinic and laboratory visit takes 150 minutes, of which only 17% would be judged as value-added to her experience. This dissatisfaction can lead to a broken physician–patient relationship because of all the waste surrounding the clinical encounter. This example occurs daily at oncology practices and underscores the need for Lean principles in oncology, which aim to eliminate all aspects of waste in the system, including “neglect/waste” of human talent. Essentially, this leads to every member of the medical team performing the tasks that they do best.

Lean Uses Simple Tools to Help Create Value for the Patient

Lean is an operating system that allows a healthcare organization to function efficiently. There is no finish line, because there is an implied assumption that there are always opportunities to improve. To this end, Lean uses tools such as value stream mapping to understand and improve the way clinicians care for patients. Mapping is a comprehensive understanding of every step a patient goes through during an episode of care; identifying

### Eight Forms of Waste in Lean (DOWNTIME)

<table>
<thead>
<tr>
<th>Category</th>
<th>Definition</th>
<th>Examples from Oncology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defects</td>
<td>Defective products or services occur triggering re-work</td>
<td>A patient who has to come back for a blood re-draw because a test was not ordered correctly.</td>
</tr>
<tr>
<td>Over-production</td>
<td>Generating an item before it is necessary “just in case”</td>
<td>An oncologist who grabs an extra set of sterile gloves before intrathecal chemotherapy “just in case.”</td>
</tr>
<tr>
<td>Waiting</td>
<td>Any service that is not progressing</td>
<td>Excessive wait for laboratory results before administering chemotherapy. A patient whose precious time is spent waiting. This form almost always accompanies other forms of wastes.</td>
</tr>
<tr>
<td>Neglect of human talent</td>
<td>Wasteful tasks that interfere with utilizing talent</td>
<td>A patient whose precious time is spent waiting. This form almost always accompanies other forms of wastes.</td>
</tr>
<tr>
<td>Transporting</td>
<td>Moving a product from one place to another; possible damage en-route</td>
<td>A transporter who has to carry chemotherapy drugs from pharmacy to the infusion area.</td>
</tr>
<tr>
<td>Inventory</td>
<td>The result of over-processing and waiting</td>
<td>Having large amounts of oral chemotherapy drugs in stock which might expire before use.</td>
</tr>
<tr>
<td>Motion</td>
<td>Unnecessary movement in a process</td>
<td>An oncologist returning to the supply room to get missing items/gloves for a bone marrow biopsy procedure.</td>
</tr>
<tr>
<td>Excess - processing</td>
<td>Excessive and expensive processes</td>
<td>Entering an admission order and then calling the admitting department because we don’t “trust the system.”</td>
</tr>
</tbody>
</table>

**Figure 1.** Lean’s value/non–value-added concept applied to oncology care. In this hypothetical example, a patient moves through a typical clinical visit, with each step’s value—from the patient’s point of view—annotated. A non–value-added step is, by definition, waste in the Lean’s framework. Abbreviations: coag, coagulation; min, minutes.
elements that add value to each step and those that add no value is critical to optimizing the entire process. Once a process is identified as needing optimization, a plan is created and executed, called the PDCA (plan–do–check–act) cycle. For example, the oncologist hypothesizes how to improve a process, evaluates whether the approach was effective, and makes adjustments and changes where necessary. This is directly analogous to what clinicians do in clinical care: hypothesize whether a regimen is effective, administer therapy, evaluate the response, and adjust treatment. Such an approach should therefore be readily translatable to operational improvement.

**Lean Focuses on Respect for People by Creating an Environment Where Providers Can Care for Patients**

At its core, Lean aims to reduce waste and allow healthcare providers to care for patients in need. Patients generally value interacting with providers, but many unnecessary tasks keep providers from doing so. Recognizing that patients are our customers is a critical part and an initial step of successful Lean implementation in the healthcare environment. Adopting this as a central tenet helps break down hierarchy, a key threat to patient safety, and empowers staff at every level to deliver quality care. To achieve that in a Lean operating system, traditional structure is reversed as frontline staff initiates changes that improve processes, whereas leaders aim to eliminate barriers that can interfere with staff’s ability to make these vital changes. The daily readiness huddle is an example of a tool that facilitates this process. The huddle helps staff prepare for the day ahead by optimizing all components needed for daily operations. The leader's role is to (1) respond to issues so the day can proceed as smoothly as possible, and (2) work systematically to prevent the problem in the future.

The huddle is also a method of communication: issues raised during huddles are color-coded to inform staff about defects and their resolution. Lean's goal is for all changes to be transparent so that everyone is aware of any pertinent issues on a given day. Lean aims to expose the defects and foster a better understanding of barriers prohibiting efficient patient care. Without knowledge of these barriers, implementing changes is not attainable. Lean encourages staff to discuss obstacles to quality care with leaders and eliminates the inherent fear that historically has prohibited frontline staff from discussing these barriers with their leadership.

**People Are Not Cars**

A common concern about implementing Lean in healthcare is the notion that patients are infinitely more complicated than manufacturing. Although some have argued otherwise, we absolutely agree. However, this misses the point: no clinician who has ever provided care in the real world would argue that the process is perfectly orchestrated, coordinated, and patient-centered. This is why Lean focuses on creating predictability, eliminating random variation in care, and reducing variation that is not driven by the patient’s needs.

To achieve these principles, Lean uses an important tool called “standard work,” which at first may sound like cookbook medicine. However, properly applied, its effect is the opposite. Standard work shows the best way that we know how to do something today and allows physicians to focus their cognitive energy on the parts of care that are not routine, and it makes problems visible so that they can be addressed. (Without a standard for what should happen, it is hard to see when it isn’t happening.) The goal is to minimize variability while accounting and planning for unavoidable inconsistency, which is no different from adhering to oncology pathways when delivering care to patients with cancer. Oncologists adhere to these clinical pathways most of the time, but deviate when clinical judgment suggests that this would be best for the patient.
How does standard work let oncologists focus their cognitive energy on the nonstandard parts of care? Think of it like a professional football team’s playbook, which has hundreds of plays. Because the routine plays are documented, known, and practiced by everyone, the team can focus on adapting to the unusual and unexpected.

**Conclusions**

Several healthcare organizations have adopted Lean as a management system and have reported better patient satisfaction, reduced costs, and improved quality. ThedaCare in Wisconsin reported an inpatient cost reduction of 25% while patient satisfaction increased significantly. At Bellevue Clinic Surgery Center in Seattle, nonoperative time was reduced by almost 50%. There is every reason to believe that Lean principles and methods will function equally well in oncology. Lean requires fundamental change in thinking, and although it is not without controversy, given our current state, Lean should be tried across oncology practices. As oncology research and practice has evolved into molecular profiling of cancer and targeted therapy, we propose that Lean methodology is the targeted innovative approach to cancer care delivery.

**References**