

## Evaluation of Outpatient Oncology Services Using Lean Methodology

Deanna Belter, RN, BSN, OCN®, Jennifer Halsey, MS, PharmD, BCPS, Heidi Severtson, MS, Amy Fix, BA, Laura Michelfelder, MT, ASCP, Karen Michalak, MT, ASCP, Patty Abella, BSN, and Angela De Ianni, MBA

The Lean Transformation Process is a methodology created by the Toyota Production System that focuses on the elimination of nonvalue-added operations in the workplace to create flow and quick response to customer demand. The process improvement strategy, when applied to the healthcare setting, can enhance the patient experience by cutting out waste (nonvalue added work) and providing a safer, streamlined visit (Lean Enterprise Institute, 2011). Because providing chemotherapy is a multistep, interdisciplinary process, it is ideal for Lean evaluation. The goal of this application was to improve the overall efficiency of the multidisciplinary chemotherapy process in an oncology infusion center by implementing changes that would decrease patient wait times and improve communication across disciplines.

The Lean initiative was implemented at an oncology infusion center in a suburban Milwaukee, WI, medical center in August 2010. Expectations included improving the overall patient experience by decreasing the patient wait time prior to chemotherapy infusion and enhancing the flow of the patient's experience through the treatment process. The process included check-in, laboratory draw, and doctor visit or RN assessment, followed by the administration of chemotherapy. The Lean methodology is a principle that also is used by the Aurora Health Care organization in the operational improvement department to help increase the value of the patient experience while decreasing the waste that creates redundancy and delays work flow (Kenny, 2011). Time is precious for a patient with cancer, and the oncology staff wanted to make the time spent at the center as valuable as possible.

### Lean Methodology in Healthcare Delivery

Lean is a process improvement strategy that focuses on identifying the waste in a process and then applying various tools to eliminate the waste and achieve flow. Since its conception in manufacturing at Toyota Motor Company in the 1980s (Lean Enterprise Institute, 2011), Lean methodology has been applied in various settings and has become an increasingly popular method for improving healthcare delivery. Virginia Mason Medical Center (VMMC) has used the method when implementing changes to their organization, including their cancer center. By implementing a variation of the Lean model, VMMC achieved waste elimination, cost reduction, and improvements in quality and safety.

Aurora Health Care adopted Lean methodology in late 2008. Since then, more than 800 supervisors, managers, healthcare providers, and administrators have been trained in Lean methodology, completing the following three online modules: (a) what is the Lean process, (b) how Lean works to improve processes, and (c) how to perform a Lean event. They also attended an interactive one-day training session where they applied the tools learned in the three online modules. As a result of the training, Aurora Health Care implemented more than 200 Lean improvements in the first year. Aurora West Allis Medical Center's oncology infusion center receives 334 patient visits and provides chemotherapy to 120 patients per month.

Providing chemotherapy services is a multistep, interdisciplinary process that involves multiple handover communications, laboratory monitoring, and chemotherapy processing, produc-

tion, and administration. As a result, delays, errors, and rework may occur, translating into longer patient wait times, inefficient use of caregiver time, drug waste, and other unrecoverable organizational costs. Therefore, the purpose of the outpatient chemotherapy services using Lean initiative was to evaluate the current process, determine ways to eliminate waste, and improve multidisciplinary coordination and communication, and, in turn, patient flow. In addition, Lean was expected to increase caregiver engagement and patient loyalty scores, optimize patient scheduling and use of caregiver resources, and decrease patient wait times (Lean Enterprise Institute, 2011).

### What Is the Lean Transformation Process?

Lean begins with eliminating waste so that the work performed on a daily basis adds value and serves patients' needs. To identify and eliminate waste, the five-step Lean Transformation Process was employed (Lean Enterprise Institute, 2011).

**Evaluate the current situation:** Before making any process improvements, baseline data are gathered so that any changes can be measured against the pretransformation process. Data are gathered through direct observations and data collection, which are valuable in obtaining the objective information of a process in its current state (e.g., actual wait times for laboratories or patients).

**Identify areas of opportunity:** The nonvalue added work is identified by looking critically at the task and analyzing the current process using the observations and data collected.