

FAST FACTS

Virginia Mason Production System

What is the Virginia Mason Production System?

The Virginia Mason Production System (VMPS) is a management method that seeks to continually improve how work is done so that the final product has zero defects. Using this method, Virginia Mason identifies and eliminates waste and inefficiency in the many processes that are part of the health care experience, making it possible for team members to deliver the highest-quality and safest patient care. By streamlining repetitive and low-touch aspects of care delivery, team members are freed to spend more time talking with, listening to and treating patients. VMPS is based on the Toyota Production System (TPS), a manufacturing approach Toyota has used for more than 50 years to produce some of the world's best automobiles.

Can car-making methods be adapted to health care?

Toyota's rigorous system empowers frontline workers to eradicate mistakes and eliminate waste in its products. A similarly rigorous system in health care empowers frontline staff to prevent errors and eliminate waste in patient care. Toyota and Virginia Mason share the same core values: quality, safety, a relentless focus on the customer, a total commitment to staff and increased satisfaction for customers and staff. All of this results in the reduction of costs without eliminating resources for patients and staff.

Why did Virginia Mason adopt TPS manufacturing principles?

Virginia Mason's vision to be the quality leader and transform health care meant adopting a paradigm shift: from assuming that defects are to be expected, to thinking and believing that zero defects in health care is not just possible, but necessary. Because health care's business and management systems had changed little since the 1960s, Virginia Mason wanted an innovative management method to make real and measurable improvements in safety, quality, service and team satisfaction. VMPS was the solution.

When did Virginia Mason adopt VMPS?

In 2000, Virginia Mason began looking for a management method that placed quality and safety as the highest priorities. It fully adopted VMPS in June 2002 and immediately began establishing new patient-care quality standards for the health care industry. Today VMPS is a daily part of work at Virginia Mason and is integral to the organization's success.

What is the Virginia Mason Institute?

Virginia Mason Institute (VMI) is a nonprofit corporation that provides education and training in the VMPS management method to other health care providers and organizations. It was established in 2008 in response to growing industry demand to learn how Virginia Mason has applied lean manufacturing principles to health care.

How does VMPS work?

VMPS uses a variety of strategies to accomplish the elimination of waste. Taiichi Ohno, the founder of TPS, identified seven wastes: inventory, time, defects, motion, processing, transportation and overproduction. Key to the elimination of these wastes is the understanding that those who do the work know what the problems are and have the best solutions. Strategies range from small-scale ideas tested and implemented immediately to long-range planning that redesigns new spaces and processes.

We use a variety of "kaizen" (continuous improvement) activities, such as Rapid Process Improvement Workshops (RPIWs), kaizen events and process redesign workshops (known as 3Ps) to guide our improvement work. Since adopting VMPS, Virginia Mason has conducted 3,127 kaizen activities involving more than 5,500 team members and many patients.

What are the benefits of VMPS?

- Patients spend more value-added time with providers, and VMPS tools and processes help providers deliver the best possible care with zero defects.
- Patients benefit from greater safety, less delay in seeing physicians for care and more timely results and treatments.
- Team members benefit by having less rework and greater opportunities to care for patients — one of the primary reasons many choose health care as a profession.
- The organization benefits because it operates more efficiently. Ultimately, savings are reinvested to support Virginia Mason's mission to improve patient health and well-being.
- The organization saved \$11 million investment by using space more efficiently and freed an estimated 25,000 square feet of space using better designs.



VMPS Results

- Reduced the time it takes to report lab test results to the patient by more than 85 percent.
- Reduced supply costs by \$2 million through inventory reduction and the 5S process. The standardization efforts and contract renegotiations continue to save more than \$2 million per year in such areas as orthopedic implant standardization.
- Reduced nurse walking distance in the hospital by 750 miles per day, freeing up more than 250 hours of time spent walking for direct patient care.
- Reduced labor expense in overtime and temporary labor by \$500,000 in just one year.
- Increased productivity by about 93 percent in a few targeted areas by moving the most common supplies to point of use and creating kits containing frequently needed supplies.
- Reduced premiums for professional liability insurance by 76 percent since 2004.

VMPS Success Stories

Alert System Improves Patient Safety

Virginia Mason developed a Patient Safety Alert (PSA) system requiring all team members to immediately report a situation that might cause patient harm and “stop the line”—that is, cease any activity that could cause further harm.

If the safety of a patient is indeed at risk, the problem is investigated and corrected immediately. Since beginning the program in 2002, team members have reported more than 73,000 PSAs. Patient safety has increased, and medical claims have dropped.

Express Treatment in the Emergency Department

Using VMPS tools, our Emergency Department team learned to predict appropriate staffing levels for patient flows in the ED. The ED team also implemented “team sort,” which is a process using standard clinical assessment tools to quickly identify and sort patients. Patients requiring minimal services receive express treatment and are discharged without going to the patient-care beds, creating capacity for those who require more extensive services.

One-Stop Care for Patients with Cancer

Using VMPS methods, the Floyd & Delores Jones Cancer Institute at Virginia Mason was redesigned with a laboratory and pharmacy inside, eliminating the need for patients to travel throughout the hospital for chemotherapy. Now all

cancer services are brought directly to patients in their private treatment rooms. For one patient, this reduced the length of his chemotherapy visit from 10 hours to two and saved about 500 feet of walking at each visit.

Hyperbaric Center Increases Patient Capacity

When the Virginia Mason Center for Hyperbaric Medicine could no longer accommodate all the patients needing treatment, VMPS tools were used to design and build a new hyperbaric center in the existing hospital space, which saved \$2 million in construction costs and increased capacity from two patients at a time to 20.

Getting Back to Nursing

Nursing teams used RPIWs to redesign the flow of work so they could focus more on patient care. Instead of caring for patients throughout a unit, nurses now work as a team with a patient-care technician (PCT) in “cells” (groups of rooms located near each other). The cell model makes it easier for nurses to monitor patients and quickly attend to needs, and communication between nurses, PCTs and rounding physicians is improved. Additional changes have been made to better align work in an effort to increase the direct nurse-to-patient time.

Critical Care Unit Designed to Maximize Flow

The design of the new Critical Care Unit (CCU) that opened in 2014 was carried out by a team that included patients and their family members, physicians, nurses and other care team members. Nurses are assigned to one of three care zones, or “neighborhoods,” to help maximize the surveillance of patients, minimize transportation and waste of motion and increase the amount of time patients receive care at their bedside. All supplies, medication and equipment required for patient care are placed at point of use. Key functions and supply stocking take place within a central core. For example, the unit includes rooms specially designed for soiled items, which are easily accessible by the housekeeping staff through a separate door connecting to the backstage area, away from patient care activity.

Combining Clinical Research with VMPS

For many patients undergoing total knee replacement, pain can be a significant barrier to mobility after surgery. Early and regular mobility is critical to returning to function. A randomized, controlled clinical trial conducted by the Virginia Mason Department of Anesthesiology demonstrated that an adductor canal nerve block can improve pain management and lead to early mobility of patients undergoing knee replacement. After the pathway was implemented, average length of stay for a patient decreased by 28 percent, and readmissions decreased by 57 percent. This work, in conjunction with other improvements, has led to Virginia Mason offering a surgical warranty for total joint replacement, which is a rarity in health care.

Contact Us

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