

VMPS Facts



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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 there are zero defects in the final product. Using this method, Virginia Mason (VM) identifies and eliminates waste and inefficiency in the many processes that are part of the health care experience, making it possible for VM staff to deliver the highest quality and safest patient care. By streamlining repetitive and low-touch aspects of care delivery, staff 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 has a very rigorous system for involving front-line staff to eradicate mistakes and eliminate waste in its products. Similar rigorous attention to all of the processes that surround the delivery of patient care demonstrates the total applicability of the tools of TPS to health care. Toyota shares the same core values as Virginia Mason: quality, safety, a relentless focus on the customer, a total commitment to staff and increased satisfaction for all. All of this results in the reduction of costs without elimination of resources for patients and staff.

Why did VM adopt TPS manufacturing principles?

Virginia Mason's vision to be the Quality Leader in health care meant adopting a paradigm shift from thinking defects are to be expected, to thinking and believing zero defects in health care is not only possible, but also necessary. While health care is advanced in technology and understanding of disease, its business and management systems have changed little since the 1950s and 1960s. VM needed a management method to help make real and measurable improvements in safety, quality, service and staff 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 by June 2002 and since then has been setting patient-care quality standards for the health care industry. VMPS is a daily part of work at Virginia Mason and is integral to the organization's success.

What is the VMI?

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. VMI was established in 2008 in response to growing industry demand to learn how Virginia Mason has applied lean manufacturing principles in 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, including inventory, time, defects, motion, processing, transportation and overproduction. Key to the elimination of these wastes is the understanding that staff 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.

VM uses a variety of "kaizen" activities, or continuous improvement activities, such as Rapid Process Improvement Workshops (RPIWs), kaizen events and process redesign workshops called 3Ps to guide its improvement work. Since adopting VMPS, VM has conducted 1,280 kaizen activities involving more than 5,500 staff 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.
- VM staff 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 VM's mission to improve patient health and well-being.

What are the results of VMPS?

- Saved \$11 million in planned capital investment by using space more efficiently and freed an estimated 25,000 square feet of space using better space designs.
- Reduced the time it takes to report lab test results to the patient by more than 85 percent.
- Reduced inventory costs by \$2 million through supply chain expense reduction and standardization efforts.
- Reduced staff walking distance by 60 miles per day.
- 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 56 percent.

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VMPS Successes

Alert System Improves Patient Safety

Virginia Mason used VMPS principles to develop a Patient Safety Alert (PSA) system requiring all staff who encounter a situation likely to harm a patient to make an immediate report and “stop the line” (i.e., cease any activity that could cause further harm). If the safety of a patient is indeed at risk, an investigation is immediately launched to correct the problem. Since beginning the program in 2002, more than 20,000 PSAs have been reported. Most reports are processed within 24 hours – a significant improvement from when reports took three to 18 months to resolve. Patient safety at VM has increased, and medical claims have dropped thanks to the PSA system.

Express Treatment in the Emergency Department

Emergency departments (ED) are a major entry point for hospitals and can be a bottleneck. Using VMPS tools, the VM ED team learned to predict appropriate staffing levels for patient flows in the ED and times of greatest demand for hospital beds.

The ED team also implemented “team sort,” which is a process using standard clinical assessment tools to quickly identify and sort patients. Those requiring minimal services receive express treatment and are discharged without going to the patient-care beds. This creates capacity for patients who require more extensive services by better matching patient need to resources provided. Through this work, Virginia Mason decreased its divert hours, the number of hours the ED was closed and unable to receive new patients, by more than 90 percent in comparing first quarter data from 2008 to 2009.

In November 2011, the ED moved into a new space, the Floyd and Delores Jones Pavilion, Level 7, which is designed using the concepts of flow, with only 17 patient beds. The new ED process flow will keep the patient at the center of all improvement efforts and solidify the team’s commitment to achieving and maintaining full access.

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 the patient in his or her private treatment room. 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 VM Center for Hyperbaric Medicine could no longer accommodate all the patients needing treatment, many assumed the solution was a new building to house larger chambers. Instead, VM used VMPS tools to design and build a new hyperbaric center in existing hospital space, which saved \$2 million in construction costs and increased capacity from two to three patients at a time to as many as 20.

Faster Revenue Cycle

VMPS principles are used in all areas of the organization, not just in the clinical setting. In 2002, the Finance Department began using VMPS methods to address outstanding revenue (revenue owed to the organization that had not been paid in a timely manner). By using VMPS tools, the medical center has seen marked improvement in Days Revenue Outstanding (DRO). The team improved DRO in the clinic from 52.3 in 2003 to 30.2 in 2010 and in the hospital from 66.5 in 2003 to 41.9 in 2010. Cash deposits improved from \$471 million in 2003 to \$746 million in 2010.

Getting Back to Nursing

In 2005, VM 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 made it easier for nurses to monitor patients and quickly attend to needs, and communication between nurses, PCTs and rounding physicians improved. Steps walked per day fell from 10,000 to roughly 1,200. The VMPS work also evaluated nurses’ duties and reassigned nonskilled work, such as room setup, to other staff, increasing the nurse-to-patient time from 35 percent to more than 90 percent.

GIM Achieves Positive Net Margin

Primary care has long been a money-losing area of health care and often a good year means breaking even. General Internal Medicine (GIM) at VM had been in the red for 34 years when the team used VMPS principles to realign its work and focus on improving the flow of patient care. The changes allowed the GIM unit to see more patients in shorter work days. Doctors, who previously stayed until 8 or 9 p.m. doing paperwork, now leave the clinic no later than 6 p.m. The turnaround time for lab results also improved from 25 days for normal results to two or fewer days. For the first time in 34 years, the team achieved a positive net margin (\$310,000 in 2007).

Pediatric Clinic Removes Waiting Room

When the Pediatric Department at VM needed to be relocated, staff and managers used the opportunity to redesign the unit structure and patient flow. One of the team’s primary goals to reduce waiting was accomplished by designing the clinic without a waiting room. Instead when patients arrive, a receptionist provides a clipboard that instructs the patient and parent where to go. Once in the room, a light system indicates to the team that the patient is ready. Medical staff enter from a back entrance. Room features include double-access cupboards that allow the pediatrician to pass paperwork and materials back and forth with a medical assistant without ever leaving the patient’s side or disrupting the appointment. This dramatically reduced the time spent waiting and improved the patient experience.

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