# Polish Dialysis Center Employees Use Visual Management to Increase Safety, Improve Organization of Medical Facility

by Katarzyna Złotowska and Adam Wise

## At a Glance . . .

- The Regional Nephrology Centre (RNC) Dializa in Poland uses efficient and effective methods of lean philosophy to ensure patient safety and a high-quality level of medical services.
- The RNC was experiencing problems related to workspace organization, use of utility rooms, and treatment space shared among patients.
- Staff used visual management (VM) lean methods such as 5S, gemba, and kaizen to improve organization and efficiency of hospital space.

Clear order and organization of tools, equipment, and personnel are crucial components for businesses to ensure daily operations run smoothly and efficiently. These components are even more critical in medical facilities where staff is challenged with providing safe and effective care space, especially in life-and-death scenarios.

At the Regional Nephrology Centre (RNC) Dializa in Poland, disorder in utility rooms caused cramping of space and confusion among staff while seeking treatment devices for patients suffering from chronic kidney disease and other ailments. Acknowledging their facility had plenty of room for improvement in the utilization and organization of facility space, RNC leaders sought to improve management of their equipment to increase patient safety and work quality of medical staff.

## About Regional Nephrology Centre Dializa

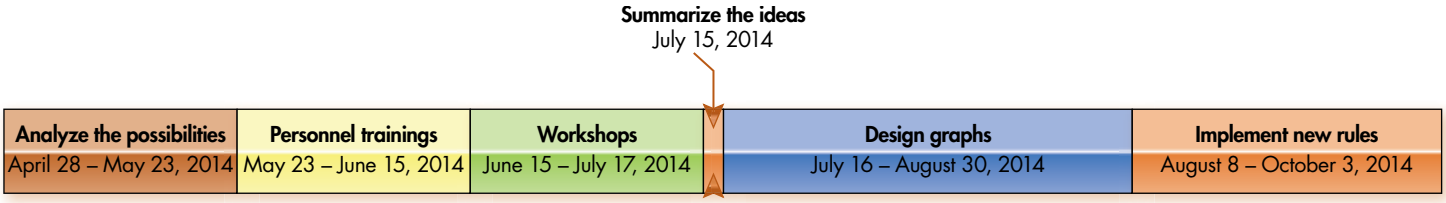
The Regional Nephrology Centre (RNC) Dializa is a dialysis medical center headquartered in Szczecinek, Poland. The RNC provides complex treatment and care of patients with chronic kidney disease and diabetes. The RNC has two locations: its main location in Szczecinek and a facility in Miastko. The RNC employs 52 individuals, including medical staff, specialists, and managers. Every year, the RNC performs 16,000 dialysis sessions, about 300 hospitalizations, and 1,200 medical counsels in medical nephrology and diabetics practice.

## Visualizing the Future of Patient Care at RNC

By improving order and organization, RNC staff would not only address accessibility and safety concerns for staff and patients, it also would affect the bottom line as it decreased the possibility of damage to medical devices by not moving equipment from place to place.

But in April 2014, standards were not followed by employees and equipment was misplaced, creating delays and problems for nurses and other medical staff as time was wasted—critical time that

Figure 1: VM Planning and Implementation Steps




should have been spent with patients. "In rooms were things that shouldn't have been there," said Katarzyna Złotowska, lean hospitals engineer at the RNC to improve clinical processes and supervise quality management systems. "Every time it was another room, another place; nurses wasting their time looking for equipment. Even some devices were used in a wrong way such as scale chairs being used as chair."

Disorder not only created confusion among staff members, but also potential obstacles during times of emergency when patients would need quick and timely transport through or out of the facility. "There wasn't any flowchart, visual procedure, or instructions for how to proceed with a wheelchair, a bed unit, or utility tool, or where they should be placed," Złotowska said. "There were only nondocumented, verbal instructions."

Visual management (VM) is a lean management tool used in many industries as well as in typical life. The main purpose of VM is to improve processes and define how processes should proceed through visualization. It relies on pictures, graphs, sounds, and visual signals, that if properly used, can organize one's work space, increase efficiency of a room's arrangement, and provide precise rules on a space's purpose.

This communication technique brings self-control around the worksite through standardization and continuity of action. Using VM in hospitals ensures specific work standards by comparing current state with future state through medical process flowcharts, process maps, and other means, creating an opportunity to evaluate if a specific current state is correct, or if there are mistakes or aberrations. VM makes work easier for hospital staff while increasing patient safety.

## The Dializa Quality Journey

The important element during implementation of this tool was the staff's awareness and commitment toward improving safety, standardization, and increasing the quality level of work and services.

Implementation of VM began April 28, 2014, starting with the storerooms and then the utility treatment rooms. The implementation was divided into individual work units (e.g., drug storehouse, utility rooms). The first month was dedicated to analyzing the possibilities, determining the usefulness of specific assets, and then training individuals on the visual management and 5S methodology. This was conducted in less than one month.

In May and June, ward nurses and other medical staff participated in recognizing new methods. Staff had many questions and new ideas on how VM could be used in the RNC. Then in June and July, new methods were practiced and opinions were shared. Employees were very excited and curious about the effects of VM.

The major milestone took place on July 15. During a brainstorming session among the project group, ambitious and practical ideas to improve work and equipment flow were offered. The next step was to design graphs identifying specific place-addresses dedicated for equipment, medical devices, medical bed units, and tables.

Upon confirmation of the lean hospitals engineer and RNC manager, the graphs were printed. Once a producer was chosen and samples accepted that were resistant to chemicals and antiseptic fluids, the signs were printed. The final milestone included implementation of new rules. After several meetings and tests, locations were chosen and items put into order with new rules being obeyed. This project involved multiple personnel, including nurses, doctors, and managers; those who felt changes could start from the "employer lever."

During VM implementation, the awareness level of each staff division is critical, as employees can eventually take their training and use it to learn from their co-workers and their processes. At Dializa, this initial process began in utility rooms and spaces where medical equipment was placed.

The following are examples of practical use of VM tools that were used in the hospital:

- Visualizing process activities
- Defining storage areas for medical beds, wheelchairs, and diagnostic equipment
- Delineating places for equipment and devices
- Conveying simple communications for patients and staff

- Defining safety pathways
- Using information signs, including flowcharts, and standardizing colors of cleaning equipment, including trash cans and dusters (red for use in cleaning operation room, blue for cleaning patient beds)
- Document organization, including numbering files, separating by type using colors, and loose-leaf binders
- Easily distinguishing staff based on uniform color

Previously at the RNC staff wore colored uniforms, but they were not detailed and divided according to type and place of work

### 5S IN BRIEF

- **Seiri** – to separate needed tools, parts, and instructions from unneeded materials and to remove the unneeded ones
- **Seiton** – to neatly arrange and identify parts and tools for ease of use
- **Seiso** – to conduct a cleanup campaign
- **Seiketsu** – to conduct seiri, seiton, and seiso daily to maintain a workplace in perfect condition
- **Shitsuke** – to form the habit of always following the first four S's

***Source:*** ASQ Knowledge Center

within the facility. The arrangement of medical devices in one room depended on individual ward nurses. So for instance, one ward nurse while cleaning up would store a device in Place B, another ward nurse put the device in Place C—there was no standardization. In general everyone knew the "address" of the device, but there was no procedure for specific storage of various types of equipment.

Following written procedures of medical processes can sometimes be hard for employees when taxed by time. Visualization of medical processes—core processes using flowcharts—saved time while making work simple and more transparent. The flowchart informs the reader what specific step they are in, how they should continue, what documents should be used for what work, and when the process is finished.

See Figure 2 for an example flowchart of process treatment of hyperparathyroidism for dialyzed patients. This flowchart is placed directly in the treatment room so all medical personnel can follow every step to maintain standardization and decrease mistakes. Every step is easily readable, and every operation has an owner responsible for it.

VM improves processes directly (better information flow, transparent steps to avoid one step or more, no risk of confusing the order of steps, provides standardization, shorter lead time) and indirectly (patient health, improving staff safety).

During the first step of improvement—possibilities analysis—stakeholders discussed their ideas, identified which places could be improved and better organized, and showed examples of VS from other countries. The stakeholders included ward nurses and managers. After a brainstorm with medical staff, the following were the planned steps of implementation and improvement:

1. Analysis of possibilities and places where VM could be used, conducted by a lean specialist with ward nurses
2. Preliminary training for ward nurses with practical samples and examples
3. Practical training (workshop) conducted in utility rooms (gemba)
4. Brainstorming, collaborative analysis, and setting out possible changes
5. Design the signs and create them
6. Implement changes and standardize methods

It was time for the lean specialist to analyze possibilities by discussing with management available resources, quality policies, mission, vision, and customer focus. Then, the team defined first-step processes that should be improved while inciting feedback from ward nurses and other medical staff.

Preliminary training showed the possibilities of visual management. Personnel acquainted with the lean philosophy of VM, definitions, and hospital examples were showed how to conduct 5S analysis (a Japanese system used to create a workplace suited for visual control and lean production).

## 5S

Practical training included covering knowledge of Dializa processes and providing awareness of processes impacting patient safety. Using the gemba ideology of going to the scene, trainees went to four utility rooms, and first using 5S methodology, sorted the rooms, defined what equipment and tools were needed, removed items that provided no function for the place, and divided resources for every utility room to avoid useless movements, transportation, and stock.

After the workshop, personnel had more ideas regarding implementing very practical solutions. Space in utility rooms was defined and some storage equipment updated, according to standards. Rooms were rearranged for better space exploitation.

Sign creation was important and difficult. Images were designed with the cooperation of a graphic designer, but the work was at times difficult because of shapes

Figure 2: Process Treatment of Hyperparathyroidism (HPT) in Hemodialysis Patients

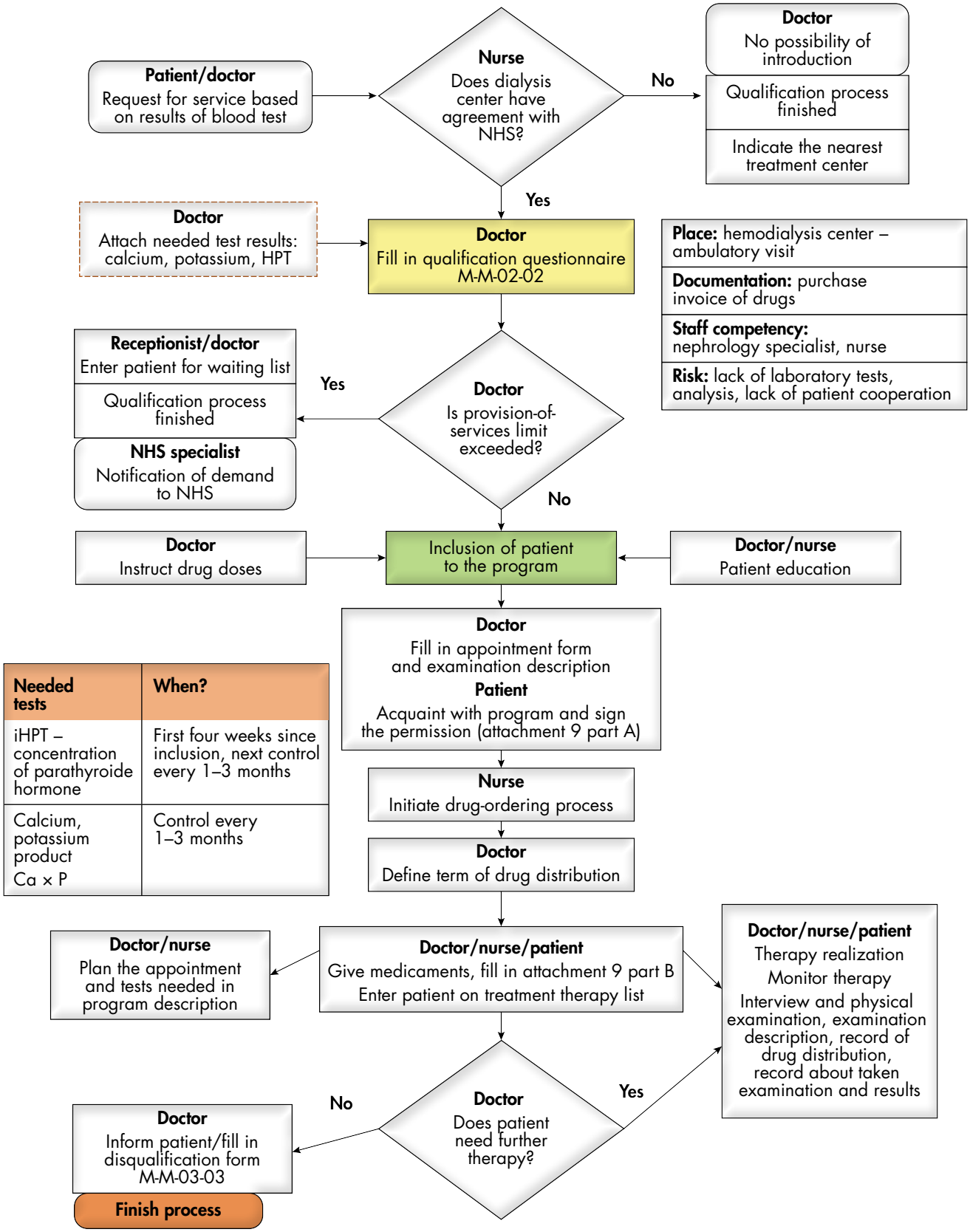


Figure 3: Order Evaluation Template Used by Nurses

| 5S | EVALUATION | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|---|---|---|---|
| SEIRI | There are no useless items, devices, or machines that impede your work at your workplace. | | | | | | | |
| | Floor is without useless things, incorrectly placed furniture. | | | | | | | |
| | Devices and things needed to execute responsibilities are accurately placed, are in working order, nothing is missing (bucket, mop, duster, fluids, washing powder, garbage bags). | | | | | | | |
| SEITON | All hallways, exit hallways, warehouse, rooms are clean, passable, and identified. | | | | | | | |
| | Every device is identified and has its own designated place. The most common devices are in the nearest place. | | | | | | | |
| | Fire extinguisher is easy to reach. | | | | | | | |
| | Shelves, cabinets, medical devices, and drugs are correct and accessible for authorized staff. | | | | | | | |
| SEISO | Surfaces are clean, with no spilled fluids or blood; garbage is sorted. | | | | | | | |
| | Lighting is functioning correctly, with no burned-out bulbs. If not needed, light is off. Ventilation—especially in bathrooms—is working correctly. | | | | | | | |
| | Do you use appropriate type and quantity of fluids, washing powder, and antiseptic substances? According to hygiene plan and instructions? | | | | | | | |
| | Are you familiar with the hygiene program and do you follow it? | | | | | | | |
| | Cabinets in dressing rooms are closed when occupied; open if empty. | | | | | | | |
| | Utility rooms, workplace units, and operating rooms have appropriate lighting and ventilation. | | | | | | | |
| SEIKETSU | Do you evaluate the 5S process every day at the RNC? | | | | | | | |
| | Do you write down the status of 5S? | | | | | | | |
| SHITSUKE | Do you wear the appropriate uniform and, if needed, gloves, mask, and glasses? | | | | | | | |
| | Do you use a yellow sign if floor is wet or damaged? | | | | | | | |
| | Do you inform your supervisor of any problems or occurrences of misplaced drugs? | | | | | | | |
| TOTAL | | | | | | | | |

YES answers = 1 point; NO answers = 0 points.

**Maximum 18 points**
**Minimum 15 points**

of signs, color decisions, defining details, etc. The signs had to be printed on special vinyl/plastic material resistant to disinfection fluids for floors, frequent cleaning, and good grip. Once the signs were printed, all stakeholders were involved in implementation of changes.

Introducing staff to the idea of VM through short, practical workshops made the team aware of the improvement project's main purpose. Ward nurses and other medical staff noticed that upon VM implementation, their work became easier while each piece of equipment had its specific, safe storage place. The entire team knew how to handle the tools and where they should be placed.

## Results

After implementation of visual management tools in utility rooms and patient spaces, workplace organization has increased in many positive ways.

Ward nurses have sorted things out. Thanks to 5S methodology, personnel created handy places for storing minimal quantities of critical items (fluids, cleaners, small buckets, wipers, etc.) to execute their work. Resources needed to complete their work are now in the nearest available space, so there's no sign of any of the seven wastes (transportation, inventory, motion, over-processing, waiting, over-production, and defects).

Because equipment now has its own, specific place for housing, risk of breakage has decreased by about 50 percent (previously it usually happened about one time per quarter). Also, patient and employee safety has increased since all standards and requirements are being followed and pathway spaces are passable.

There is no potential injury risk to individuals (e.g., patients stumbling over wrongly placed equipment, patient and personnel infections) because the organization eliminated the causes of potential nonconformities. The risk decreased by about 70 percent. Due to visual management, monthly costs for detergents, mops, and other cleaning equipment decreased about 40 percent.

Thanks to 5S, there are no out-of-stock detergents or medical equipment. Because everything now has its own place, ordering logistics are simpler. The ability to track inventory is much easier, so staff can order only the needed quantity, avoiding excesses and wasted storage space. Also, the time needed to prepare an order has decreased in half. Now nurses go to a utility room, conduct their count, and then order.

As a result, RNC has made progress with visual management and placed vital equipment in effective places. Safety and awareness has increased dramatically; personnel feel like "co-authors" of new changes and improvement, which has been inspirational for all employees.

## For More Information

- To learn more about this project, you may contact Katarzyna Złotowska at katarzyna.zlotowska@gmail.com.
- Find Regional Nephrology Centre Dializa online at www.dializa.eu.
- Find lean hospital services at www.annawruk.com.pl and directly at www.leanhospitals.com.pl.
- To read more examples of success in quality, visit the ASQ Knowledge Center at asq.org/knowledge-center/case-studies.

### *About the Author*

**Katarzyna Złotowska**, a lean hospitals engineer and quality assurance manager, is a quality leader in Regional Nephrology Centre Dializa sp. z o.o. Złotowska is accountable for quality management systems, information safety, and lean processes at the medical facility. She is a certified auditor of ISO 9001 and ISO 14001, and a project manager. She is responsible for medical process improvement, and staff education concerning quality, processes, new methods, and methodology.

Master nurse Malgorzata Klim attends to a patient at the RNC.