



The 5S-KAIZEN-TQM approach training materials

# Basic concept of the 5S-KAIZEN-TQM approach

Japan International Cooperation Agency  
Fujita Planning Co., Ltd.



# Objectives

At the end of the lecture, the participants will be able

- To understand overall concept of 5S-KAIZEN-TQM approach
- To explain about “KAIZEN mind”
- To explain about basic concept and purpose of the 5S, KAIZEN and TQM approach









**Do you think that an unclean and disorganized hospital is capable of providing quality and safe healthcare services?**

How can we solve these problems?

# Example of problems at health facilities



Improper commodities management



Unsafe practice at ward



Improper waste management



Improper record keeping



Shortage of commodities, Improper inventory



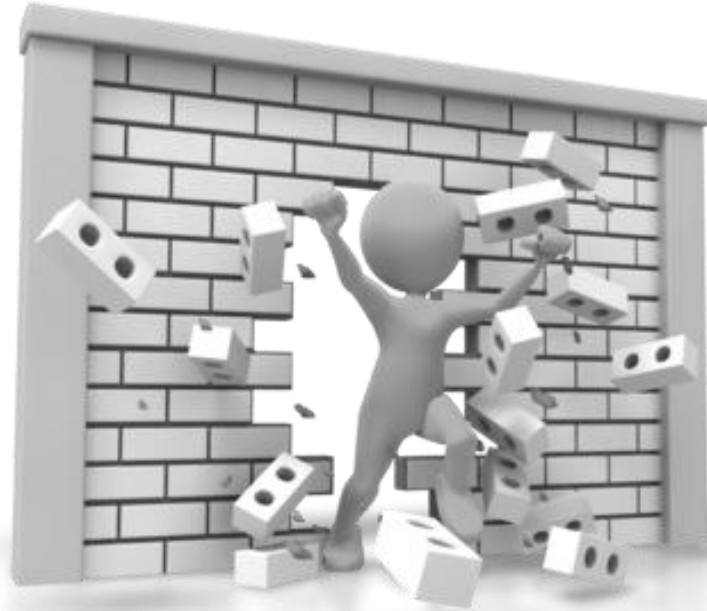
Overcrowded, Long waiting time



In many countries, these issues have persisted for a long time, hindering efforts to improve the quality of health services



**The answer is**



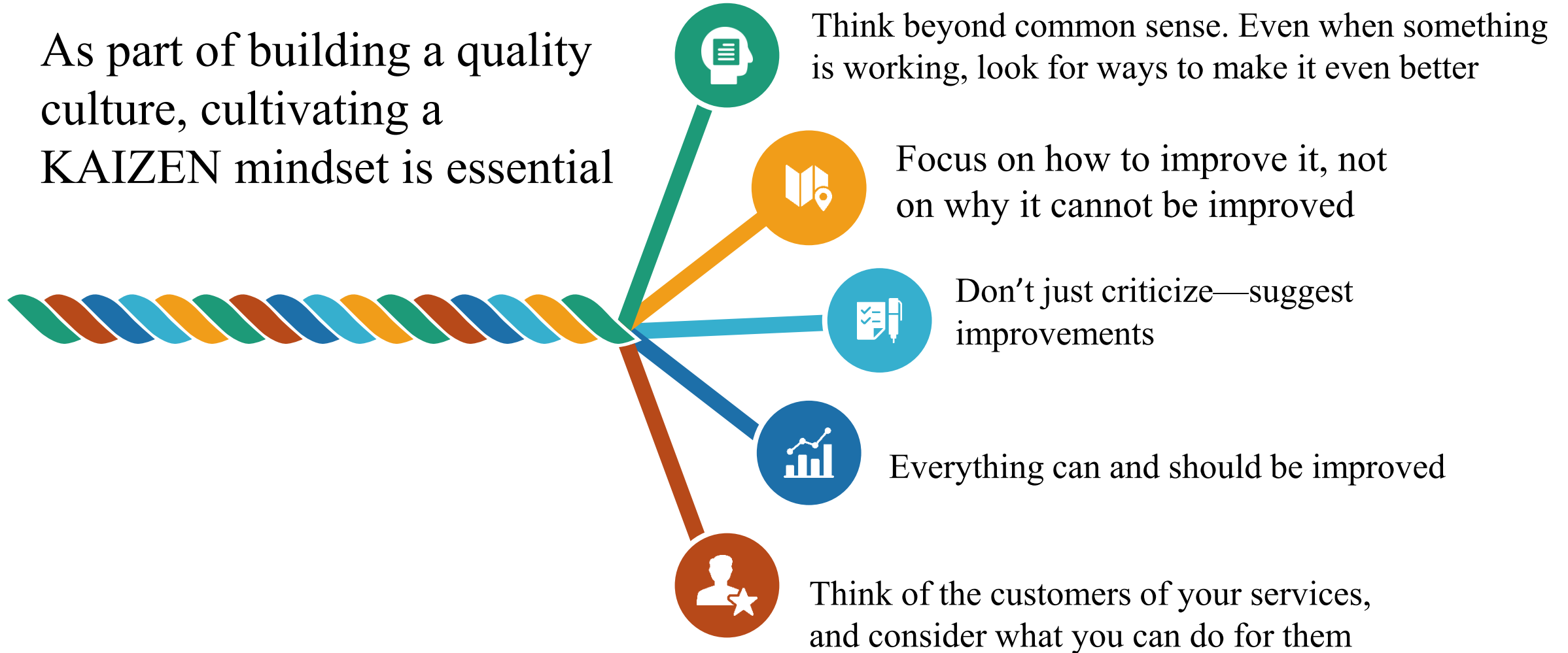
**The 5S-KAIZEN-TQM approach will help  
you to overcome the current challenges**

# What is the 5S-KAIZEN-TQM approach?

- The 5S-KAIZEN-TQM approach” was developed by JICA experts in 2007 under the program called the “Asia-Africa Knowledge Co-creation Program (AAKCP)” to improve the quality of healthcare services in Africa.
- It is a stepwise approach for improving organizational management, quality, and safety, originating from Japanese management philosophy.
- Each step (5S, KAIZEN, and TQM) has its own meaning, purpose, and process; however, they are closely linked to one another.
- The starting point is the “KAIZEN mindset” — the desire to do something better.

# KAIZEN mind

As part of building a quality culture, cultivating a KAIZEN mindset is essential



# Target of the 5S-KAIZEN is to reduce “three types of deviations; “Muri, Mura, Muda”

## MURI

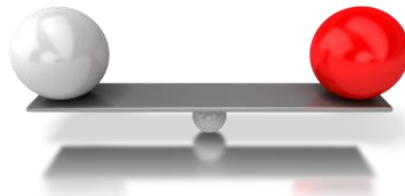
It refers to being overworked. When workloads become unreasonable — due to Mura or removing too much Muda — people and equipment are more likely to fail. For staff, this results in lower productivity, more absenteeism, and higher turnover

## MURA

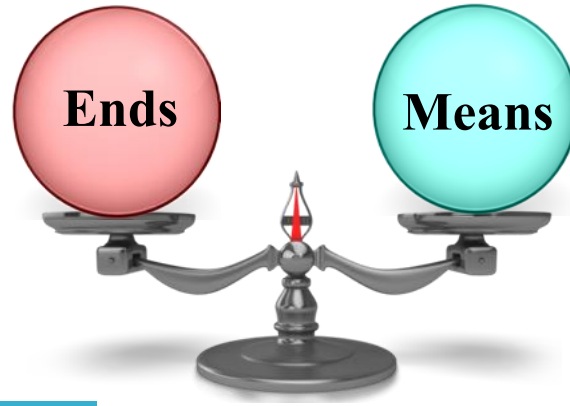
Mura” refers to irregularity or unevenness. It often causes waste (*Muda*) by creating losses and delays. Lean systems prevent Mura by balancing workloads or adding capacity where necessary

## MUDA

Muda” means waste. Some non-value-added work is necessary, but unnecessary work should be eliminated. Lean identifies seven major types of waste.

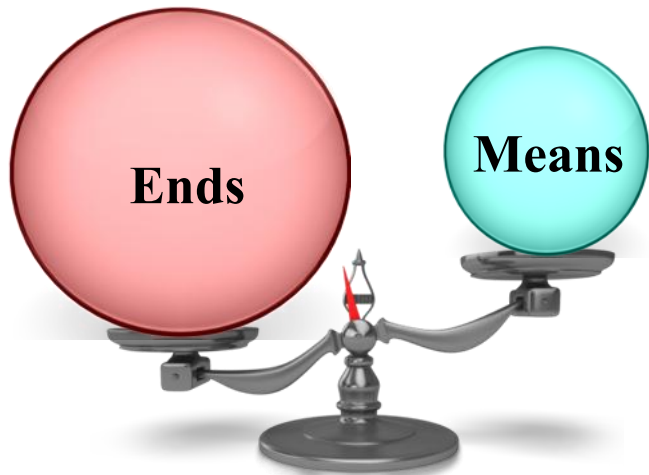


# Balance of “ends” and “means”

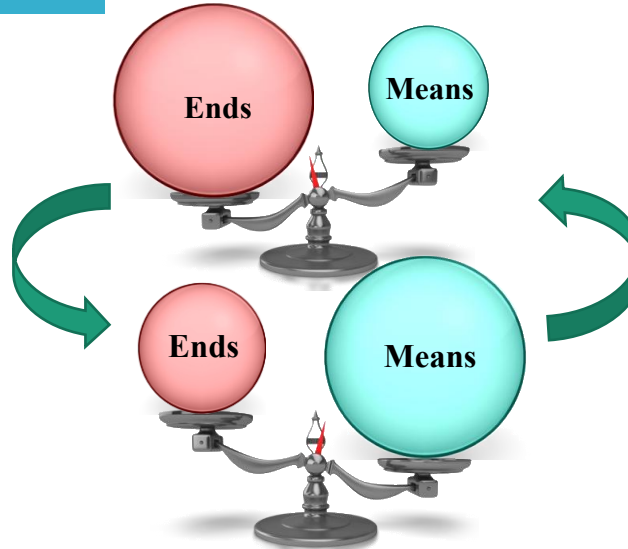


Balanced: **Optimization**

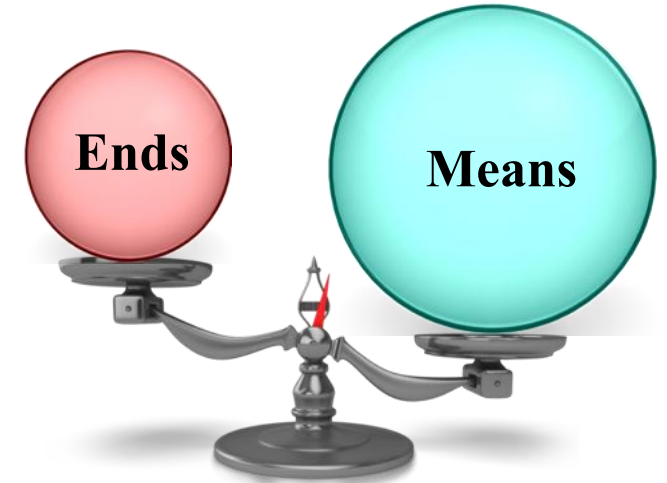
*Use 5S-KAIZEN to eliminate  
“MURI”, “MURA”, “MUDA”*



“MURI”: **Over worked**

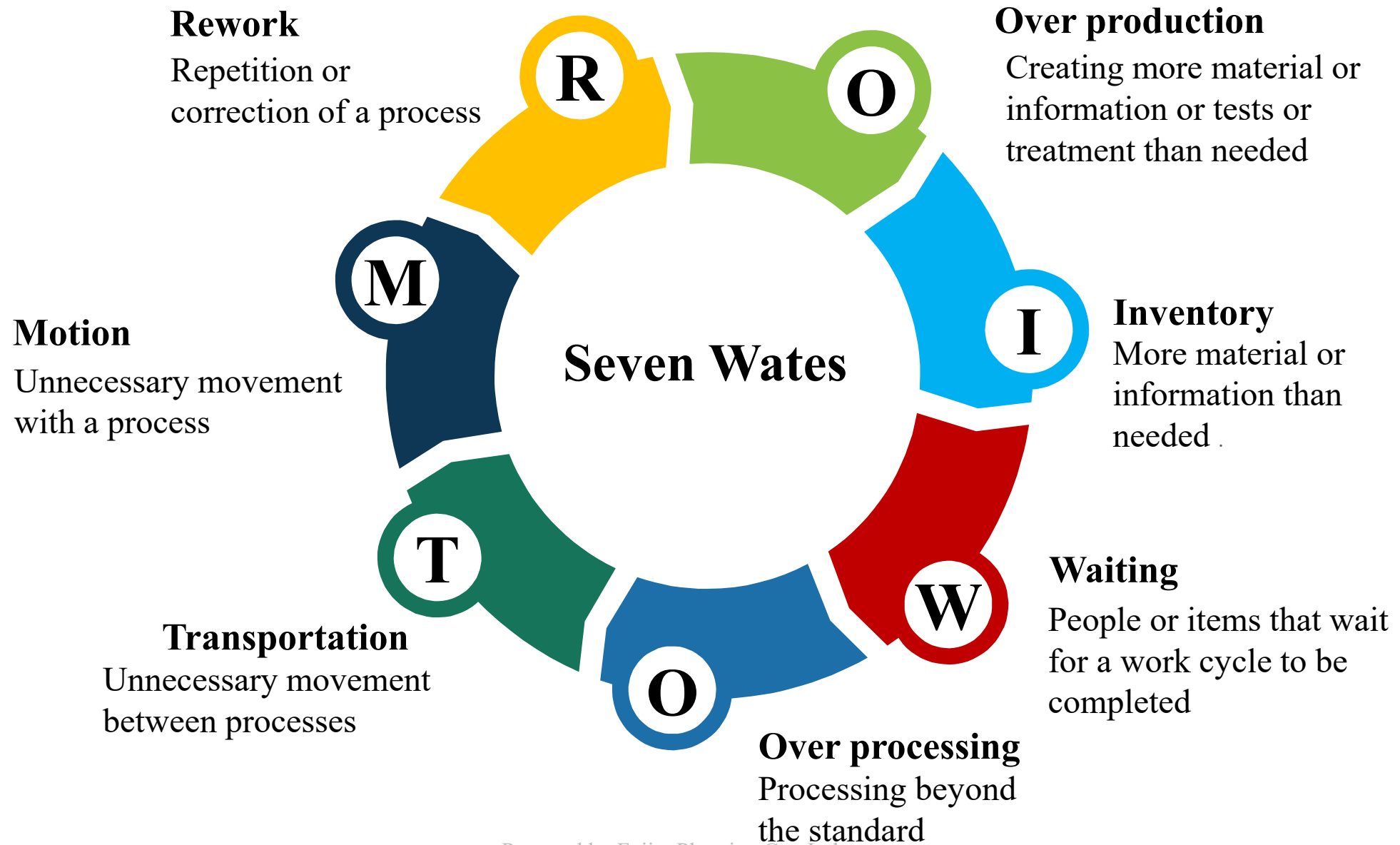


“MURA”: **Unevenness**

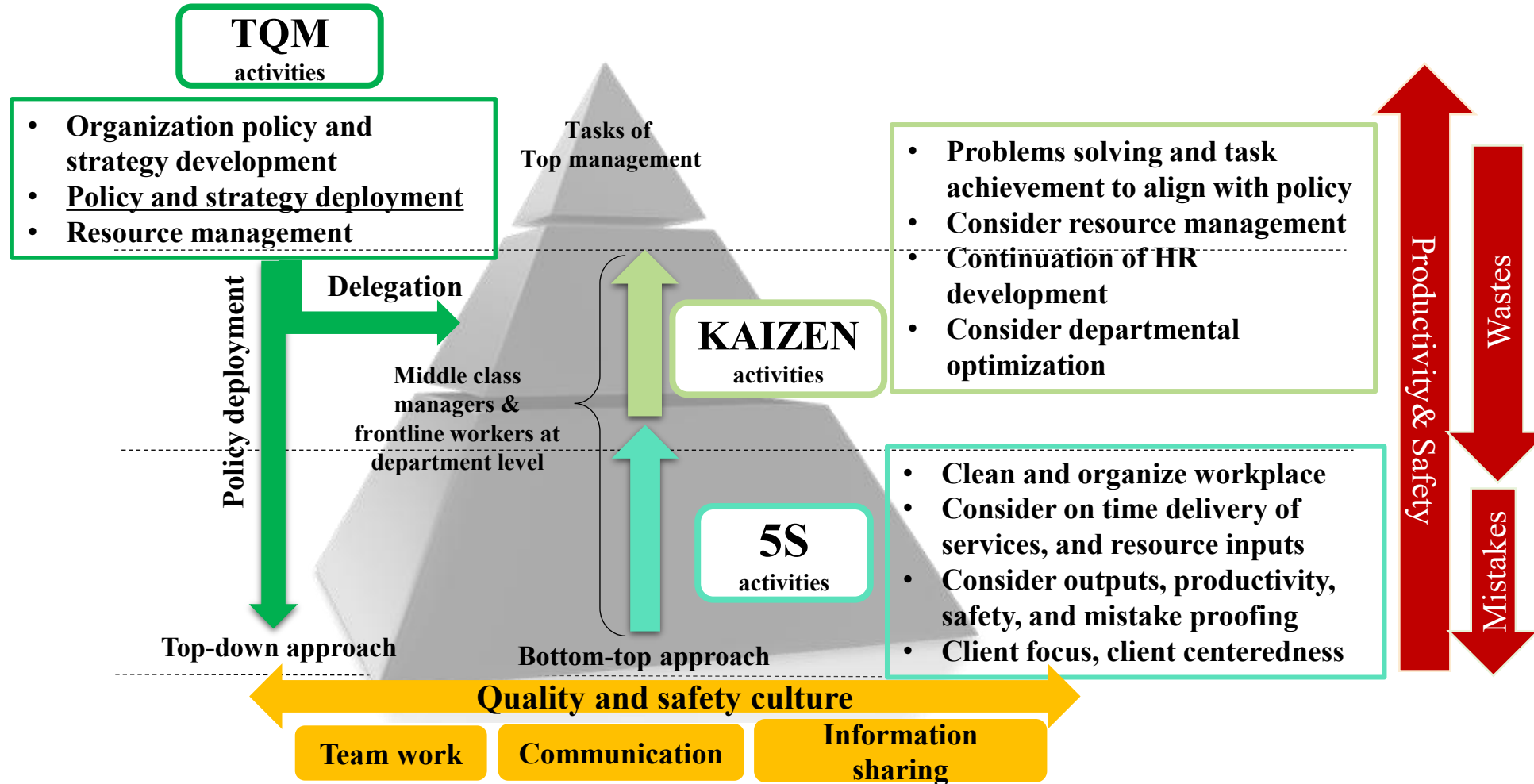


“MUDA”: **Waste**<sub>14</sub>

# 7 Wates: There are seven categories of waste under “Muda”



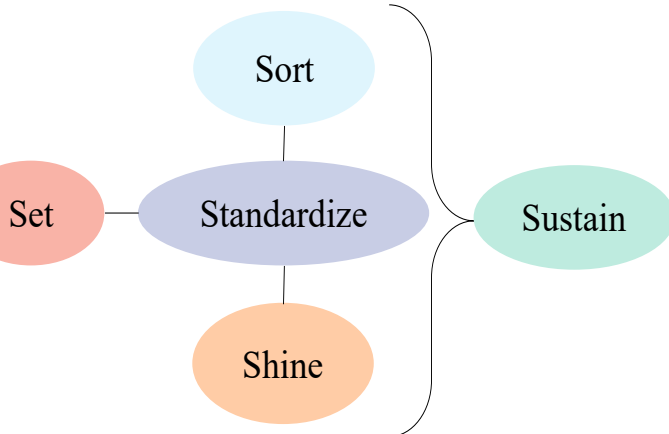
# 5S-KAIZEN-TQM is able to bring about holistic changes to each of the layers of the hierarchical structure of health services



# 5S-KAIZEN-TQM Framework

Whole activities need to be supported by top management = TQM

5S activities



Full participation  
Daily practice of 5S activities

Performance improvement

KAIZEN

Performance improvement

KAIZEN

Performance improvement

KAIZEN

Continuous practice of KAIZEN

Work Environment Improvement

High Work Efficiency by improved performance of healthcare providers under Lean Service System

Better Quality of Service

- Preparedness
- Standardization
- Timeliness
- Completeness
- Communication
- Safety

# **The 5S approach**

# What is 5S?

- 5S is a philosophy and a method for managing the workspace and workflow to improve the working environment and increase efficiency by eliminating waste.
- Implementing 5S is effective in improving quality, productivity, safety, and mistake-proofing, which ultimately leads to higher client satisfaction.

整理  
Seiri

Sort

整頓  
Seiton

Set

清掃  
Seiso

Shine

清潔  
Seiketu

Standardize

躰  
Sitsuke

Sustain

# What is the 5S?

## Sustain

Maintain S1-S4 through discipline, commitment and empowerment

---

## Standardize

Maintain an environment where S1 to S3 are implemented consistently throughout the organization

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## The 5S approach



## Sort

Remove unnecessary items that are not needed for the current workflow.

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## Set

It is based on finding efficient and effective ways to store necessary items according to the current workflow.

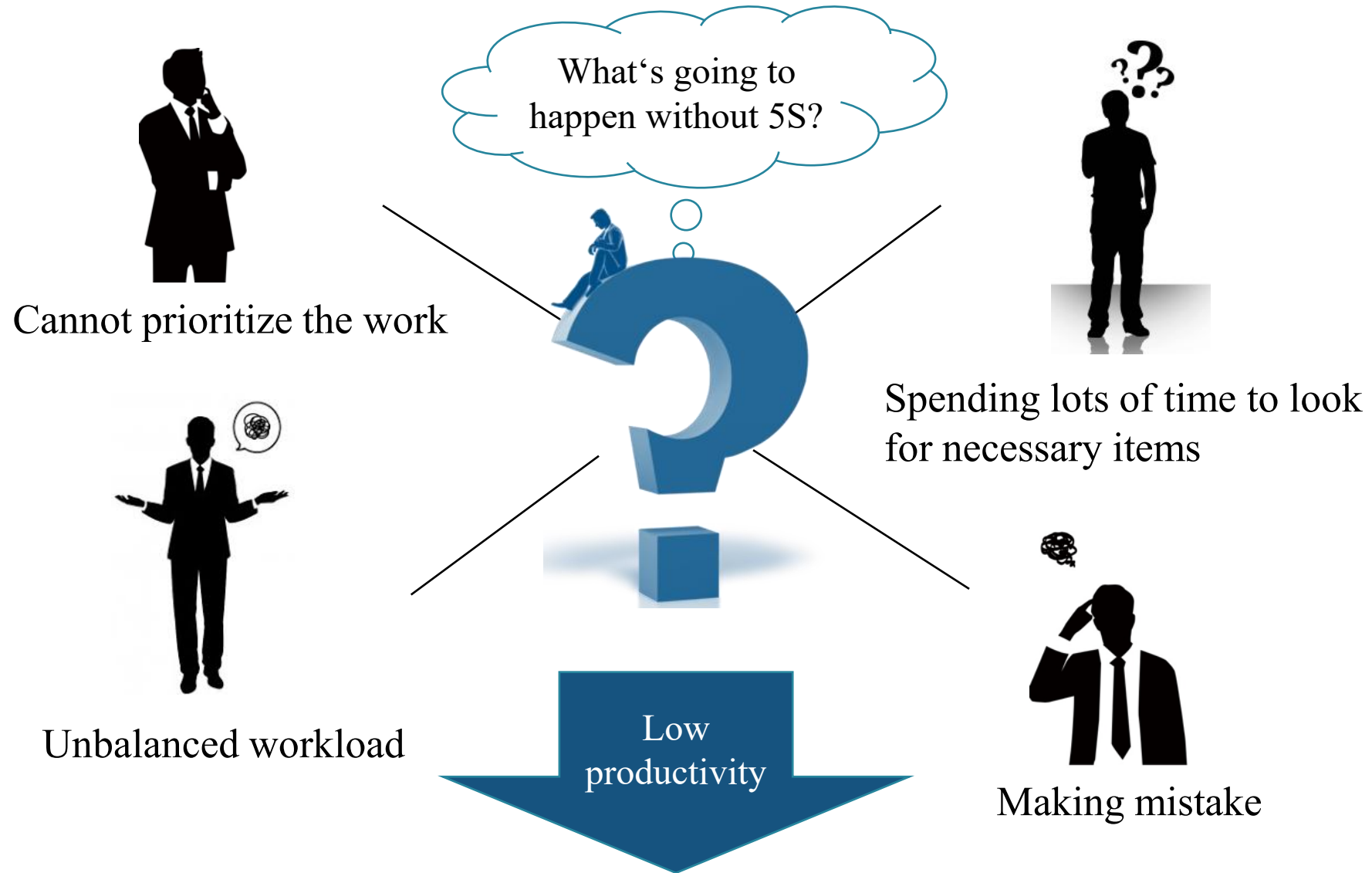
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## Shine

Clean the workplace daily so that there is no dust on floors, tools, machines, or equipment, and ensure that all tools, machines, and equipment are in good working condition.



# If no 5S activities in your workplace....



# **The KAIZEN approach**

# What is “KAIZEN”?



KAI  
“Change”

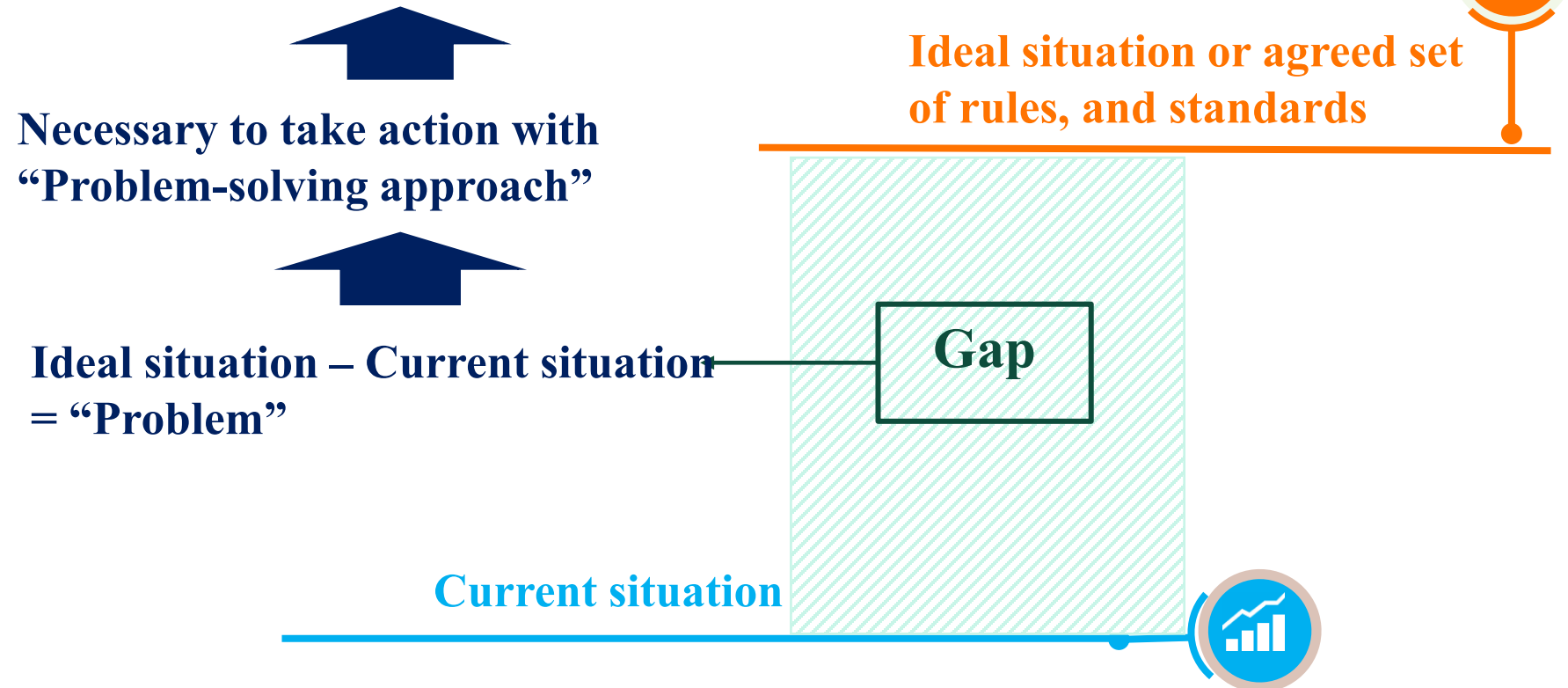
ZEN  
“Improvement”

“KAIZEN” is a **problem-solving process** that improves quality, safety, and departmental functions, contributing to overall organizational optimization.

*It means “Change for the better”*

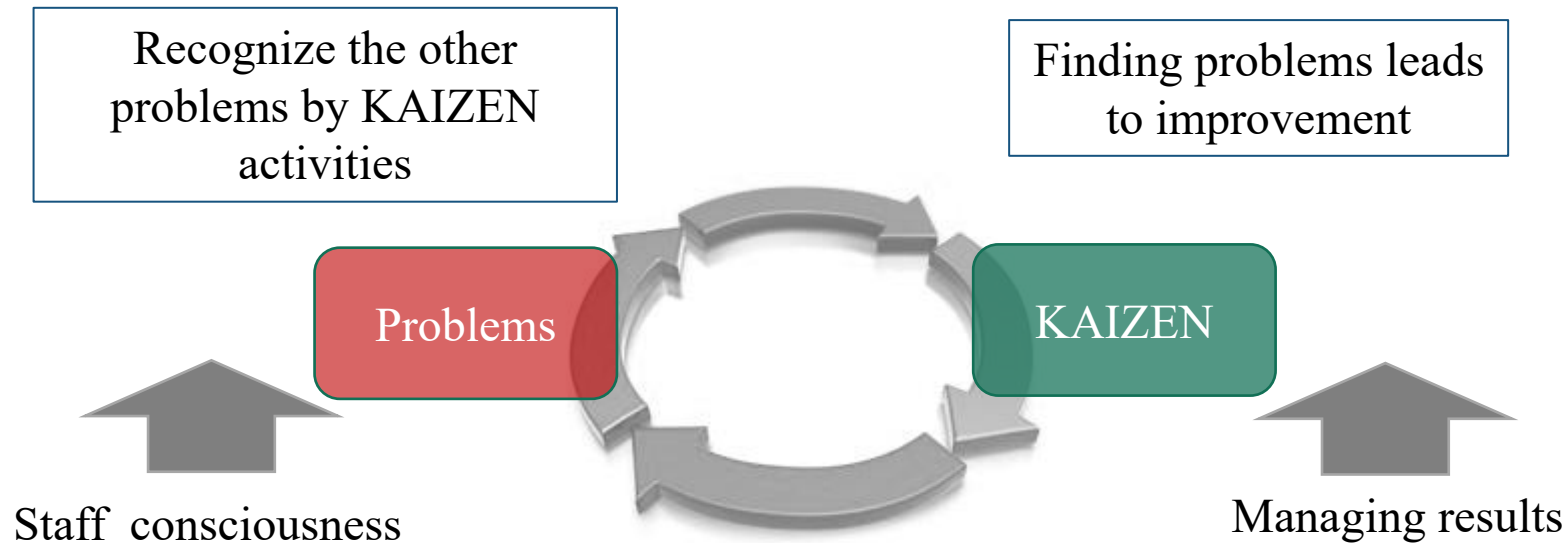
# KAIZEN = taking action to reduce the "gap"

Enhance organizational management, strengthen problem-solving, and improve the working environment through KAIZEN.



# Basics of KAIZEN

- Being aware of organizational problems, recognizing your share of responsibility, and taking initiative and acting autonomously to address the problem will lead to better organizational management.



# Characteristics of KAIZEN

- Starting with the *KAIZEN mindset*. It is a way of thinking that aims to continuously make things better for our clients, improving the situation even through small steps.
- The target of KAIZEN is **your own work**, not the work of others.
- Frontline workers identify solutions and implement them themselves to improve the situation.
- KAIZEN focuses on improving the **processes, mechanisms, and systems** used in the current workflow.

# Two types of KAIZEN

## Quick KAIZEN

- It is for solving **non-complicated** issue/problem
- “Solutions” can be implemented within short period of time (1~2 days), and improvement of work environment and services can be seen rapidly
- Very little investment of resources

## KAIZEN with QC story

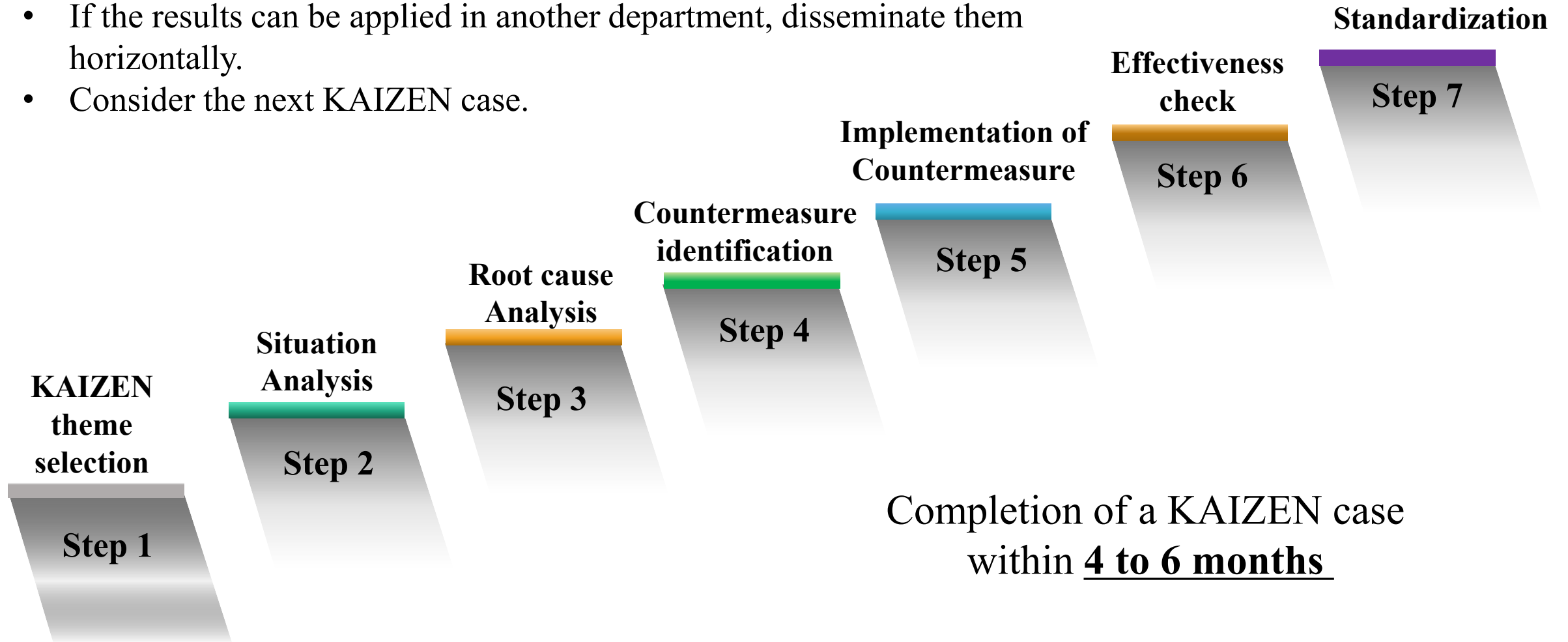
- It is for solving **complicated** issue/problem
- It is necessary to use some quality control tools carry out the KAIZEN process
- It is necessary to conduct situation analysis with evidences (data and information)
- Whole process takes 4 to 6 months
- Need some resources for interventions

# Benefits of quick KAIZEN

- Quick KAIZEN can provide the following benefits:
  - Build confidence among workers by accumulating small, continuous successful experiences.
  - Cultivate a positive mindset among staff.
  - Improve responsiveness in facilities and service delivery.
  - Strengthen record-keeping habits among staff.

# Steps of QC story

- Continue standardized practices and monitor their implementation.
- If the results can be applied in another department, disseminate them horizontally.
- Consider the next KAIZEN case.



# Benefits of KAIZEN with QC story

- The following benefits can be obtained by using the QC Story approach for KAIZEN (problem-solving process):
  - Strengthening departmental teamwork.
  - Solving or reducing problems, enabling smoother and safer work performance.
  - Providing valuable, evidence-based information for managerial decision-making.
  - Helping to prevent the recurrence of the same problems.
  - Allowing successful KAIZEN cases to be shared across departments, benefiting the entire organization.

# **Total Quality Management**

# What is TQM?

- **Total Quality Management (TQM)** is a multidisciplinary and participatory process, continuously implemented by all categories of staff to achieve high-quality services and organizational optimization.
- The TQM process (which includes **5S** and **KAIZEN**) should be integrated into the institutional managerial framework to achieve:
  - high productivity,
  - cost-effectiveness,
  - quality and safety of services,
  - improved staff morale,
  - strengthened ethical standards, and
  - effective service delivery that creates value for clients

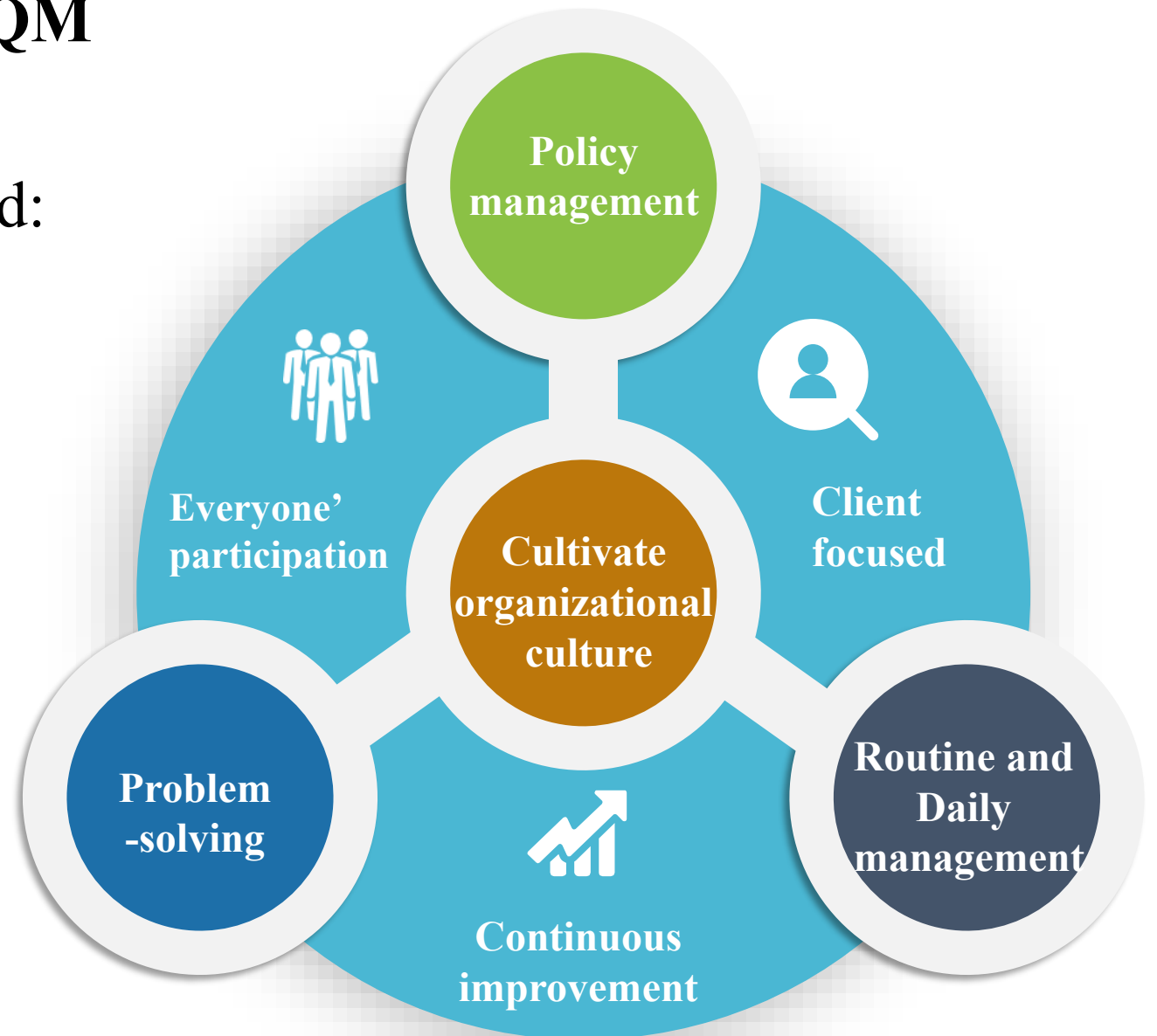
# Definition of TQM

- Total Quality Management (TQM) may have been the first quality-oriented philosophy to transition into healthcare.
- There are five basics of TQM:
  - a focus on customers,
  - continuous improvement and learning,
  - participation and teamwork by all employees,
  - a commitment by top management, and
  - a process approach to the organization's business challenges.

## 3 basic concept of TQM and 4 TQM activities structure

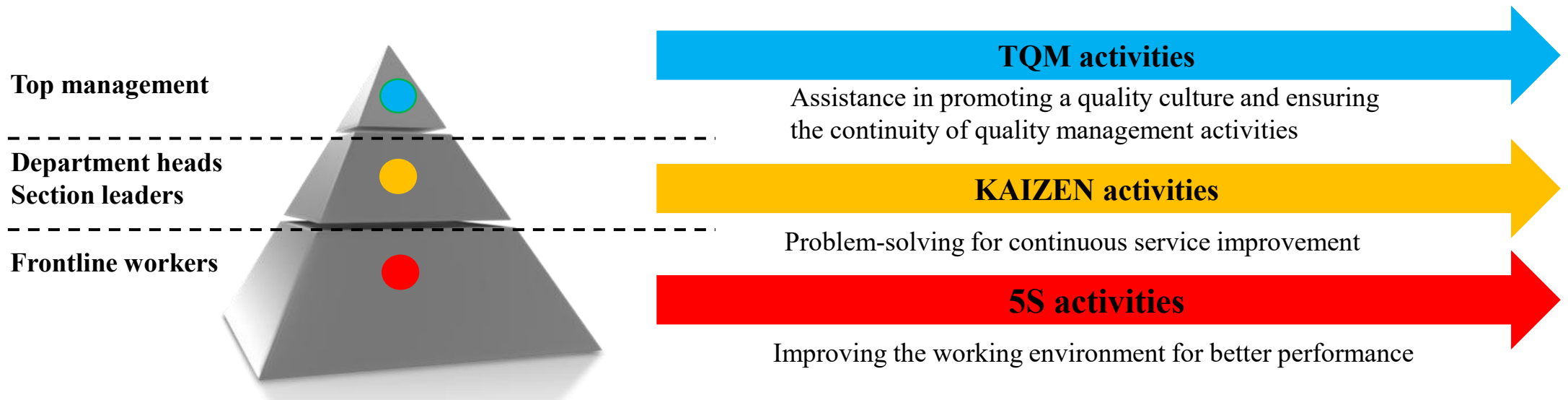
Everyone in the organization should:

- think and act from their own position,
- implement the principle of customer focus,
- acquire basic knowledge and skills in quality control, and
- strengthen and improve the organizational structure to flexibly respond to changes through practical application



# The timing of implementing the 5S-KAIZEN-TQM approach

- There has been a mistaken instruction that the 5S-KAIZEN-TQM approach should be implemented in a step-by-step manner.
- Currently, when providing guidance on the timing of implementing the 5S-KAIZEN-TQM approach, it should be emphasized that although 5S, KAIZEN, and TQM are independent activities with their own objectives, they are closely related and should be implemented **concurrently and continuously**.



## Quote from Taiichi Ohno on Continuous Quality Improvement



- *Having no problem is the biggest problem of all*

Taiichi Ohno : 1912 – 1990  
Former vice president of TOYOTA Motors  
Father of Toyota Production System

# Thank You!

Any question, comments, clarification you need?



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# What is the 5S approach?

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# Objectives

At the end of the lecture, the participants will be able

- To define the 5S approach
- To explain why the 5S approach is needed
- To explain about each S (Sort, Set, Shine, Standardize, and Sustain)
- To explain about 3Fs and Ergonomics
- To explain about how to introduce the 5S activities in to healthcare facility

# What is 5S?

## Japanese

- Seiri
- Seiton
- Seiso
- Seiketsu
- Sitsuke

## English

- Sort
- Set
- Shine
- Standardize
- Sustain



The 5S approach is a tool that was originally developed in the Japanese manufacturing sector to organize the workplace. “5S” stands for five Japanese terms that all begin with the letter “S.”

# What is the 5S?

## Definition by ASQ

- The 5S approach is defined as a methodology that creates a workplace that is clean, uncluttered, safe, and well organized to help reduce waste and optimize productivity.
- It is designed to support the development of a quality work environment—both physically and mentally.
- The 5S philosophy can be applied in any work area that benefits from visual control and lean production. The 5S condition of a workplace is critical for employees and forms the basis of customers' first impressions.

# Why the 5S activity is needed?

- At work, various forms of overwork (muri), unevenness (mura), and waste (muda) occur every day.
  - People make small mistakes and sometimes repeat them.
  - These mistakes create confusion in our work by causing delays or forcing rework.
  - We also spend a lot of time searching for materials, tools, or information, and this lost time affects our productivity.
  - When doing something for the first time—or when attempting something we previously failed at—we may feel embarrassed or anxious, which can hinder calm judgment and effective action.



If these factors are left unaddressed, we may eventually run into trouble and develop a major problem.

# What is the 5S?

## Sustain

Maintain S1-S4 through discipline, commitment and empowerment

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## Standardize

Maintain an environment where S1 to S3 are implemented consistently throughout the organization

---

## The 5S approach



## Sort

Remove unnecessary items that are not needed for the current workflow.

---

## Set

It is based on finding efficient and effective ways to store necessary items according to the current workflow.

---

## Shine

Clean the workplace daily so that there is no dust on floors, tools, machines, or equipment, and ensure that all tools, machines, and equipment are in good working condition.

# S1: Sort

1. Categorize equipment, furniture, tool in your working place into the following 3 categories
  - a. Necessary
  - b. Unnecessary
  - c. May not necessary
2. Have criteria for "discarding"
3. Eliminating unnecessary items from the workplace. Make sure that "Unnecessary item store" to be established and discard unnecessary items per items
4. This step also helps to change the "just in case attitude"

# Criteria for “discarding” to sort the unnecessary items

Items	Rules for discarding (examples)	
Documents/Papers	<ul style="list-style-type: none"> <li>Document, which is not used in the past one year</li> </ul>	
Tools	<ul style="list-style-type: none"> <li>Tool, which is broken and cannot use</li> </ul>	
Equipment	<ul style="list-style-type: none"> <li>Equipment, which is out of order and cannot repaired</li> </ul>	If it is repairable, send it to workshop and fix it
Furniture	<ul style="list-style-type: none"> <li>Furniture, which is out of order and cannot repaired</li> </ul>	If it is repairable, send it to workshop and fix it
Parts	<ul style="list-style-type: none"> <li>Parts, which is no longer needed for repair as the item is no longer used</li> </ul>	Ask other departments/sections or other hospitals is need
Commodities	<ul style="list-style-type: none"> <li>Commodities and medicines which are expired.</li> </ul>	

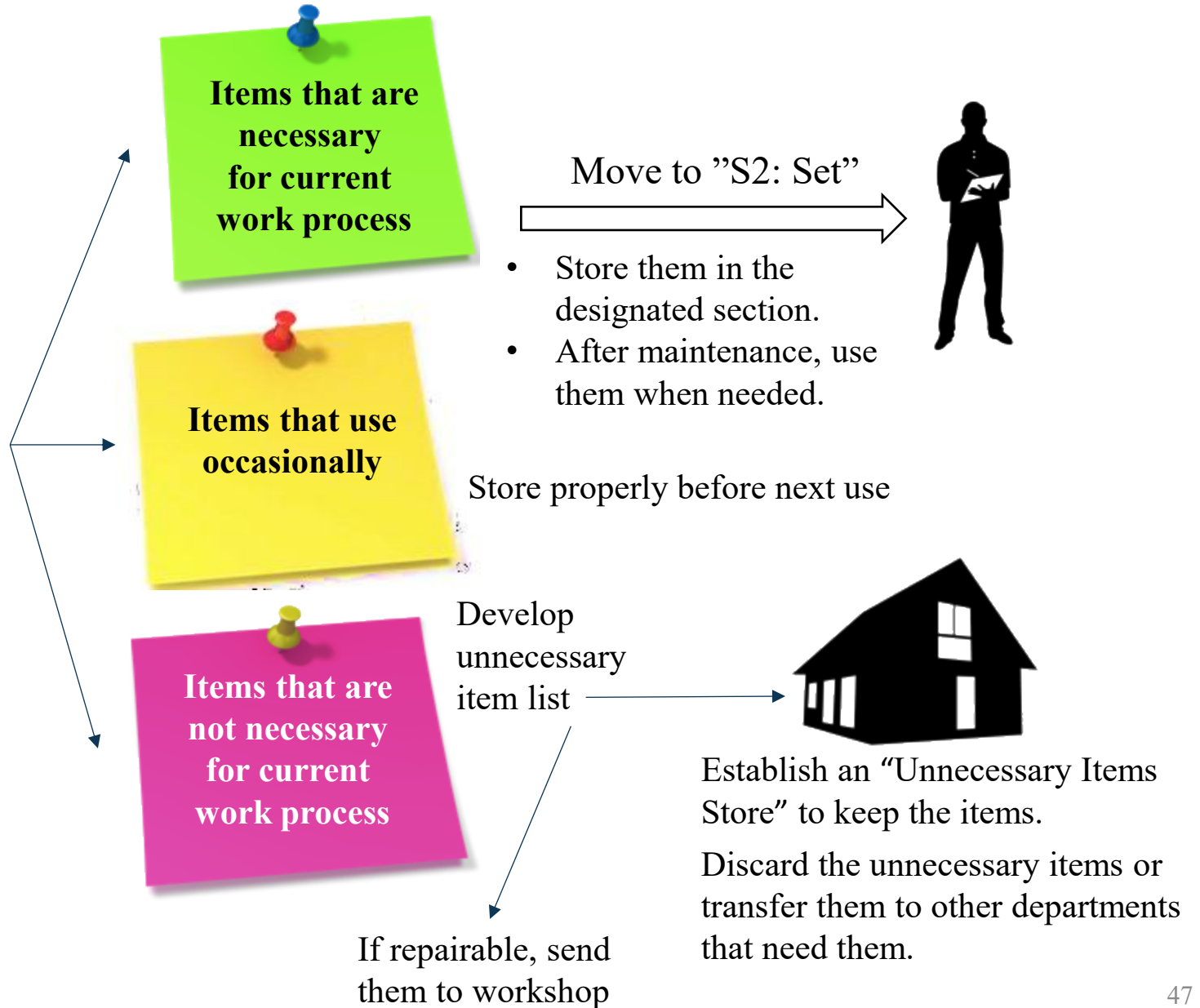
All discarding items must be registered, and develop unnecessary inventory list

# S1: Sort

Have criteria for "discarding"



Categorize all medical equipment, tools, files, furniture, office equipment, etc. in your workplace into **the three categories** shown on the right.



# Removing unnecessary items



Unplanned sorting of unnecessary items



Establishment of unnecessary item store (recommended)

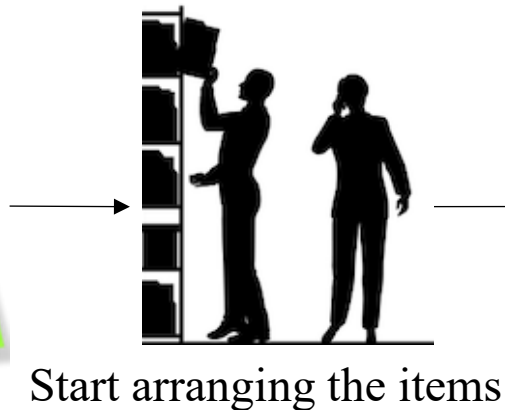
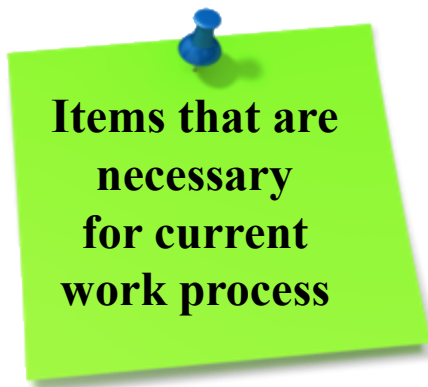
## S2: Set

- “Set” is based on finding efficient and effective ways to store necessary items according to the current workflow.
- Apply the “Can see, Can take out, and Can return” philosophy to improve productivity and prevent mistakes.
- To apply this philosophy, determine:
  - the place to put each necessary item,
  - how to arrange the necessary items, and
  - labeling to identify the necessary items.
- This will save time and energy spent searching for things

# S2: Set

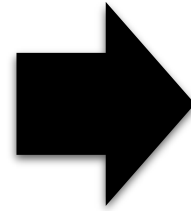
## Key for Setting activities

- Set rules for “Set” activities.
- Consider workflow and efficiency when arranging items in the workplace.
- Use tools such as labeling, color coding, and zoning to sustain 5S activities.
- Apply the “Can see, Can take out, Can return” philosophy to improve productivity, and make use of the “3F” principles

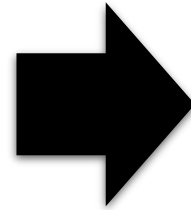


Have consensus among co-workers on where and how to arrange the items that are needed for current work process

Before



After setting



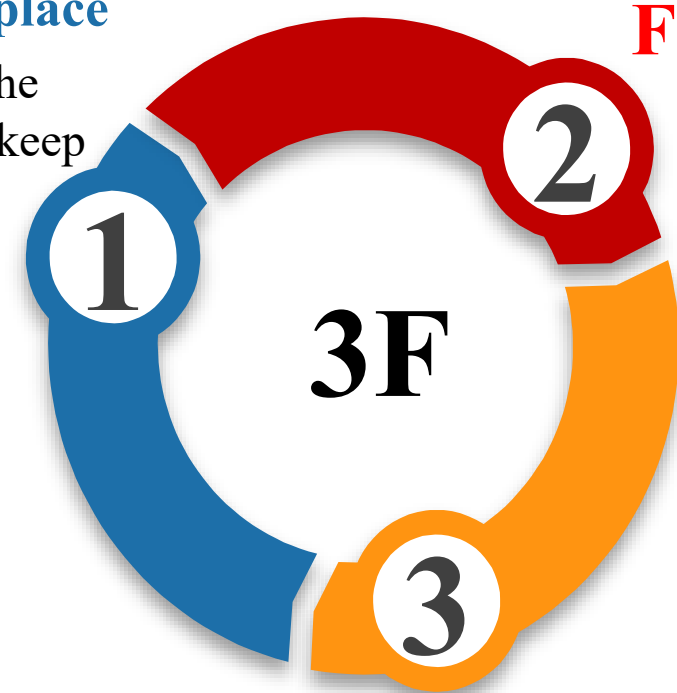
# “ 3F ”

## Useful concepts for S2:setting activities

- It is useful to apply the “Can see, Can take out, and Can return” philosophy together with proper inventory management of commodities to improve productivity.
- The “3F” principles can be practiced effectively by using 5S tools such as labeling, zoning, numbering, and color coding

### Fixed place

Clarify the place to keep



### Fixed items

Clarify the items to keep the fixed place

### Fixed numbers

Clarify how many of fixed items to keep the fixed place

# Consider the application of “ergonomics”

- During the process of improving the working environment using the 5S approach—especially in the S2 stage—it is recommended to apply ergonomic principles to ensure the safety of both staff and clients.
- Ergonomics is defined as an applied science focused on designing and arranging tools, equipment, and workspaces so that people can interact with them efficiently and safely, while minimizing physical stress. It is also referred to as biotechnology, human engineering, or human factors.
- When applying 5S tools, ergonomics should be taken into consideration to reduce physical strain and further improve the working environment.



## S3: Shine

- Cleaning up one's workplace daily so that there is no dust on floors, machines or equipment.
- Possible to check defects in facilities and equipment at the same time while cleaning the workplace.
- It will create ownership and build pride in the workers

# S3: Shine

## Key for Shining activities

- Clean your workplace every day before going home.
- Develop and follow a regular cleaning and maintenance schedule.
- Store cleaning tools properly.
- Segregate medical waste appropriately





# S4: Standardization

- The purpose is to create a situation in which problems and abnormal conditions can be visually detected, immediately recognized, and addressed through appropriate judgment and action.
- To achieve this:
  - Maintain an environment where S1 to S3 are implemented consistently across the organization.
  - Continuously improve 3S activities.
  - Provide opportunities for employees to actively participate in the development of these standards.

# S4: Standardization

## Key for Standardization activities

- Develop mechanisms to standardize the implementation of S1–S3 to ensure continuity.
- Standardization leads to the equalization of activities — “production leveling and smoothing.”
- Standardization is useful for:
  - Facilitating the smooth implementation of S1–S3 activities
  - Ensuring consistency in process outputs
  - Promoting participation from everyone





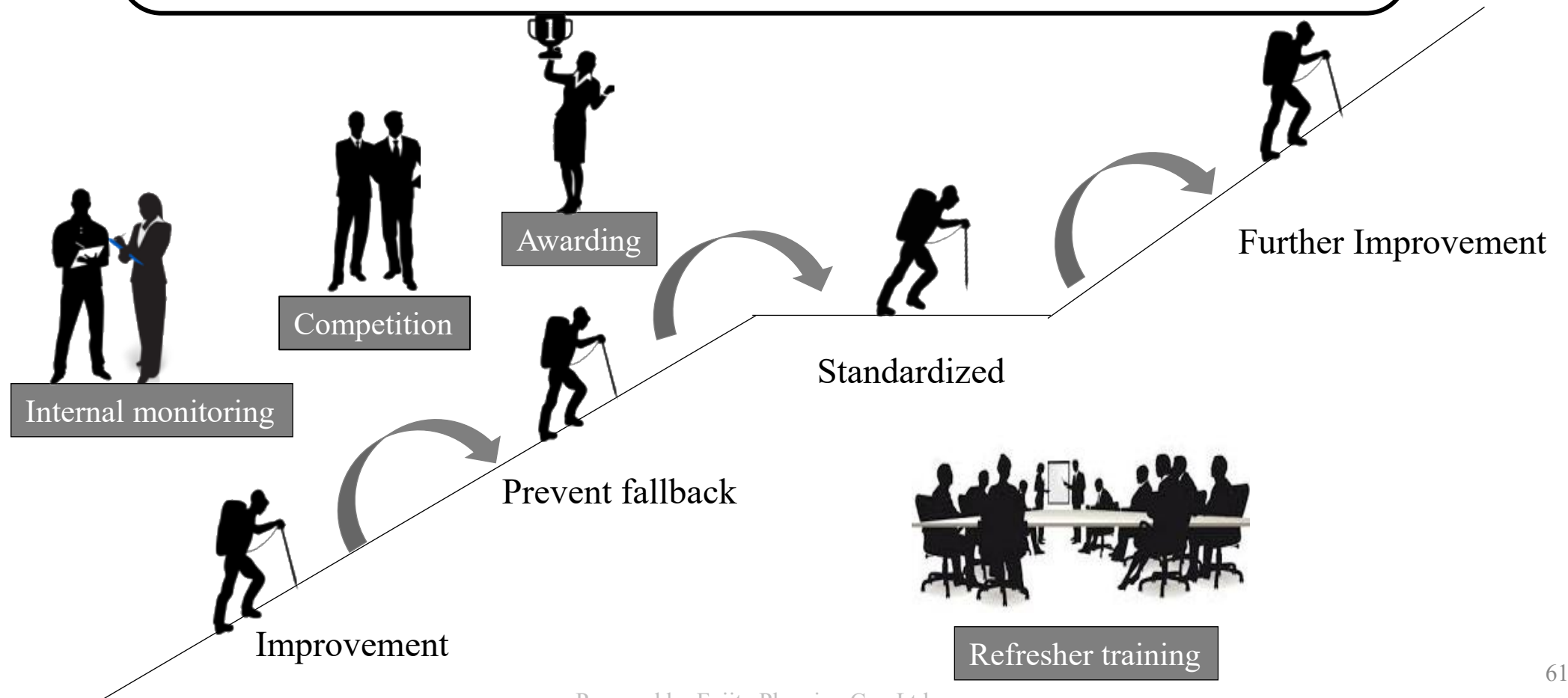
# S5: Sustain

- Maintain S1–S4 through discipline, commitment, and empowerment of workers.
- It is important to develop the habit of practicing these activities consistently.
- This stage focuses on establishing a new mindset and setting standards in the workplace

# S5: Sustain

## Key for Sustain activities

- People tend to lose interest if there are no changes, which may lead them to stop practicing 5S activities. Therefore, it is necessary to develop mechanisms that keep staff excited and motivated.





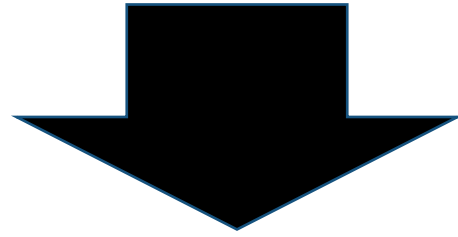
# Benefits to be derived from implementing the 5S

- Improved safety
- Higher equipment availability
- Lower defect rates
- Reduced costs
- Increased production agility and flexibility
- Improved employee morale
- Better asset utilization
- Enhanced enterprise image to customers, suppliers, employees, and management

# Key factors for successful 5S

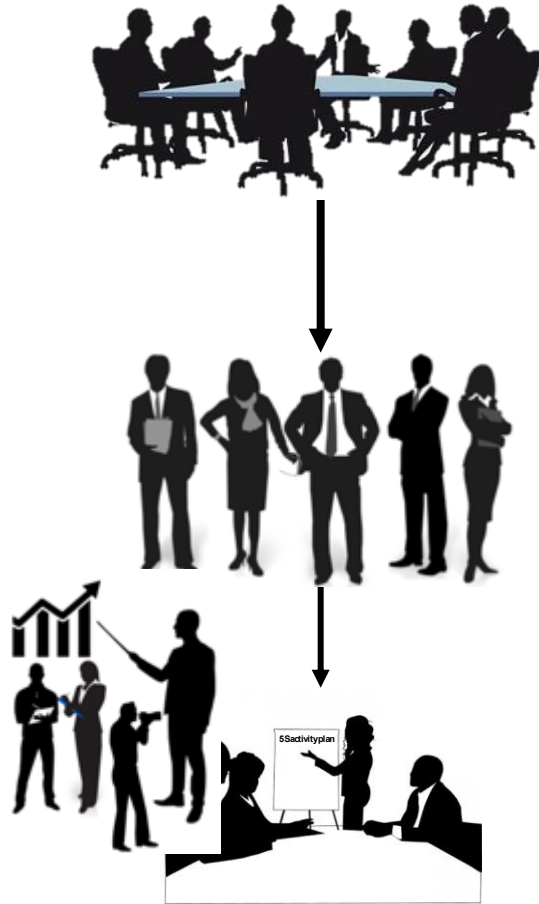
1. Continued commitment and support from top management
2. 5S begins with education and training
3. In 5S, there are no observers — everyone participates
4. Establish common rules for 5S activities and share them with all staff
5. Repeat the 5S cycle to achieve a higher standard
6. Designate a place for storing unnecessary items before disposal or sorting

Now that you understand what 5S is,  
the next step is to learn **how to introduce 5S  
effectively into your organization.**



Use appropriate tools and techniques for the effective application of 5S.

# How to introduce the 5S into your organization



- Top management needs to have a clear understanding of the benefits of 5S activities.
- They should formally declare the introduction of 5S and request everyone's participation
- Implementation of 5S activities should be incorporated into organizational policy and communicated to middle-level managers and frontline workers.
- Establish a 5S implementation structure and an M&E mechanism.

Hospital management select the participants of ToT



Training of Trainers(ToT)

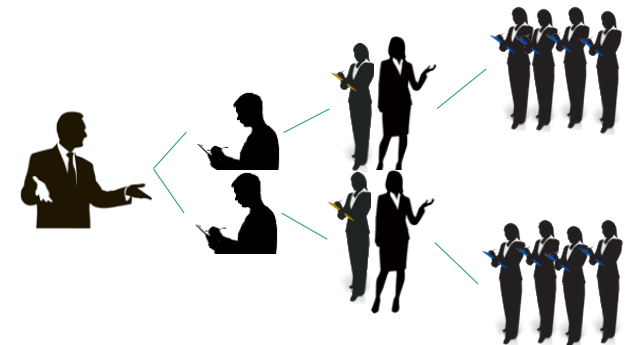


Selected participants attend the ToT



Return to the hospital and organize in-house training for managers, section heads, and WIT members.

Apply a cascade training mechanism and disseminate 5S-KAIZEN throughout the hospital.





# Time frame for 5S introduction and expansion

TIME



3 months



6 months



2 years



On going



## Preparatory phase

- Dissemination
- QIT establishment
- Situation analysis
- Target area(s) selection
- Management training

## Introductory phase

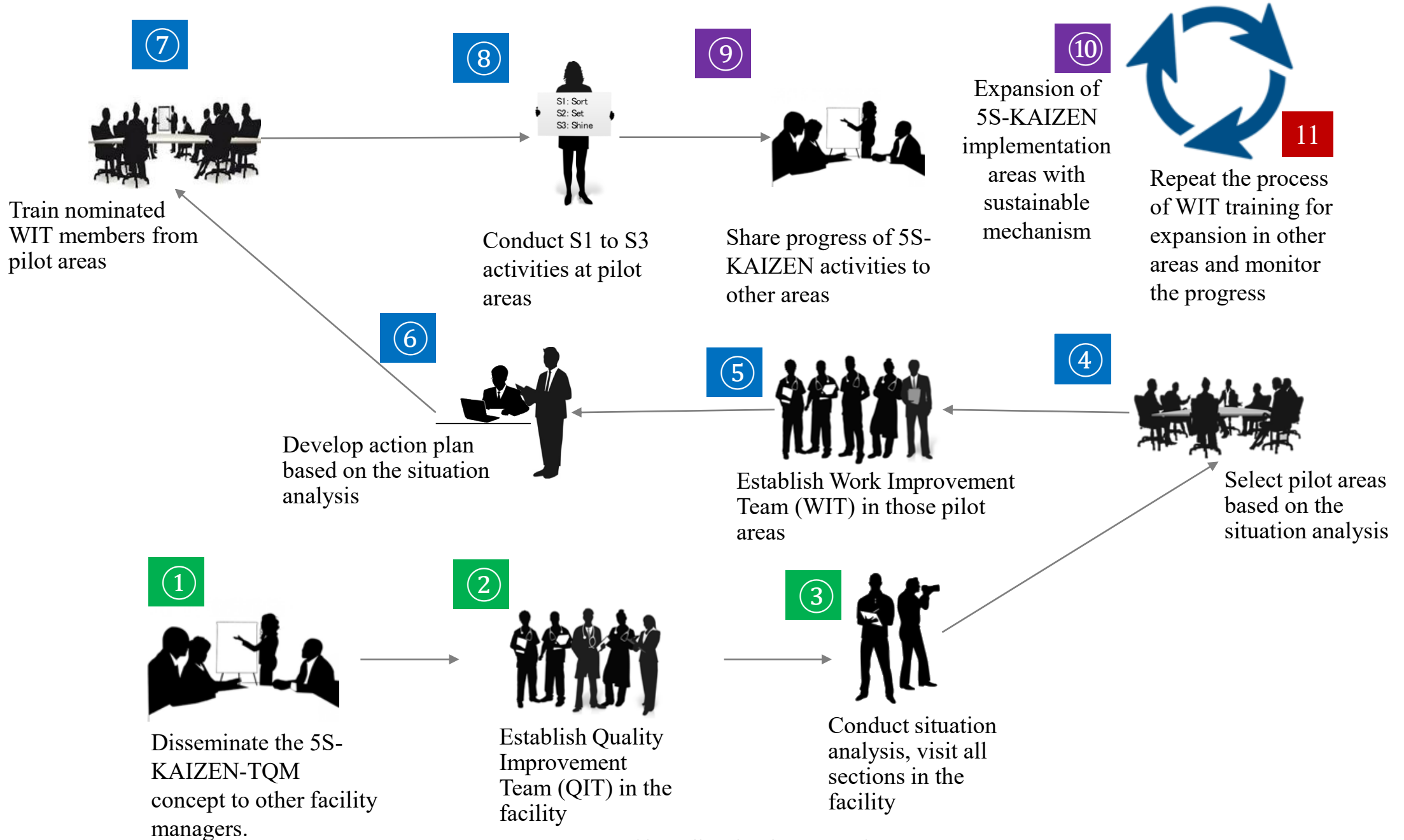
- Staff-level training,
- WIT formulation,
- Sorting(S1) – setting(S2) – shining (3) activities

## Implementation phase

- Expansion of 5S-KAIZEN activities
- Staff training on 5S and KAIZEN
- Regular monitoring and evaluation
- Standardising activities

## Maintenance phase

- Refresher training
- Continuous M&E
- Awarding and recognition
- Succession plan in QIT



# Thank You!

Any question, comments, clarification you need?



**The 5S-KAIZEN-TQM approach training materials**

# **Useful tools for the 5S activities and Visual control**

**Japan International Cooperation Agency  
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# Objectives

At the end of the lecture, the participants will be able

- To understand the purpose of using the 5S tools
- To explain about the purpose of the common 5S tools
- To explain about how to use the common 5S tools
- To explain about visual control method
- To use the common 5S tools and visual control method to implement the 5S activities

# What are the “tools” for 5S activities

- The following tools are useful for implementing 5S activities aimed at improving
  - space utilization,
  - productivity/efficiency,
  - safety, communication,
  - mistake-proofing, and
  - sustainability.
- When applying these tools, it is essential to establish agreed-upon rules, and ensure that all staff in the institution are familiar with them

# 5S activities and “5S tools”

## 5S tools

The use of 5S tools helps accelerate the achievement of the intended objectives of 5S activities



## Growing 5S activities

Improve productivity, safety, mistake-proofing, and waste reduction, among others

# Common useful tools for 5S activities

- Red tag
- Alignment
- Labeling
- Tapes
- Numbering,
- Alphabetical coding
- Safety signs
- Signboard
- Zoning
- X-Y axis
- Symbols
- Color coding
- 5S Corner

# 5S tools are applied in our daily life



**Tools for  
productivity/efficiency  
improvement and mistake proofing**

# Red tag

**5S RED TAG** | GoLeanSixSigma.com

Date: \_\_\_\_\_ Tagged By: \_\_\_\_\_

Item Description: \_\_\_\_\_

Department: \_\_\_\_\_

**ITEM TYPE:**

<input type="checkbox"/> Raw Materials	<input type="checkbox"/> Tools
<input type="checkbox"/> Finished Goods	<input type="checkbox"/> Instruments
<input type="checkbox"/> Work In Progress	<input type="checkbox"/> Equipment
<input type="checkbox"/> Machine Parts	<input type="checkbox"/> Other

Other: \_\_\_\_\_

**REASON TAGGED:**

<input type="checkbox"/> No Longer Used	<input type="checkbox"/> Unknown Owner
<input type="checkbox"/> Doesn't Work	<input type="checkbox"/> Other


Other: \_\_\_\_\_

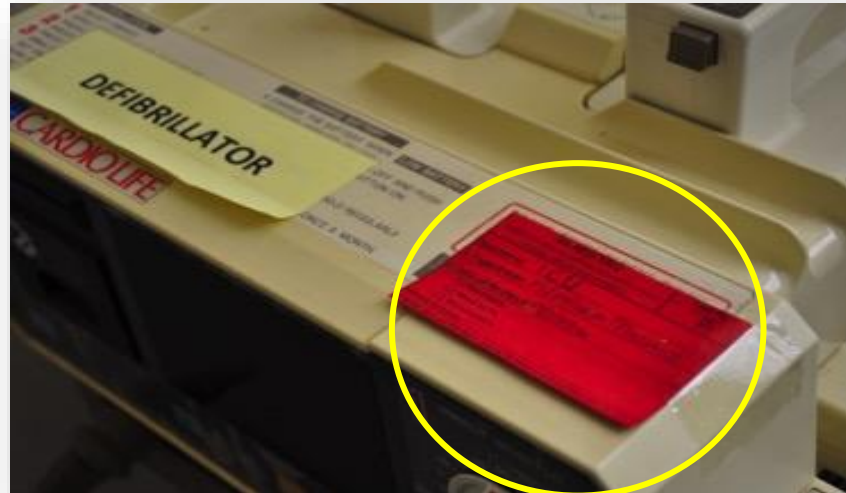
**ACTION TO TAKE:**

<input type="checkbox"/> Trash
<input type="checkbox"/> Hold
<input type="checkbox"/> Move to _____
<input type="checkbox"/> Contact _____
<input type="checkbox"/> Other: _____

Date: \_\_\_\_\_ Manager's Initials: \_\_\_\_\_

Tag Number: \_\_\_\_\_

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- **Useful for S1 activities.**

- It accelerates decision-making when identifying unnecessary items.
- Removing unnecessary items from the current workflow leads to improved productivity.

## [Instructions for Use]

1. Develop your own red tag.
2. Fill in the tag with the required information.
3. Attach the tag to items you are unsure about whether they are *necessary* or *unnecessary*.
4. Leave the tagged items for one month.
  - If the item is used during the month → It is **necessary** for the current work process.
  - If the item is **not used at all** → It is **unnecessary** for the current work process

# Alignment



## Useful for S2 activities.

- It aims to improve the orderliness of arranging equipment, furniture, items, and so on.
- It helps create space and clarify workflow, leading to improved productivity.

## [Instructions for Use]

1. Consider the workflow, available space, and the arrangement of items.
2. Decide on the correct position for storing each item.
3. Use lines or tape to clearly mark alignment and designated areas.

.

# Labeling



## Useful for S2 activities.

- It helps identify items and designate the correct place to store them.
- It reduces the time and effort needed to locate necessary items, leading to improved productivity.

## [Instructions for Use]

1. Designate an appropriate place for each item.
2. Arrange the items accordingly.
3. Create and attach visible and readable labels.

# Taping



## Useful for S2 activities.

- It aims to improve the arrangement of files and other items.
- It helps identify necessary items and prevents them from being returned to the wrong place, which leads to improved productivity and mistake-proofing.

## [Instructions for Use]

1. Arrange books, files, and other items properly according to your workflow.
2. Draw a continuous diagonal line across the spines of the books/files/items using markers, ribbons, strings, or other appropriate materials depending on your situation.



# Numbering



## Useful for S2 activities.

- It helps identify files and items by using numbers.
- It improves the speed of locating files and items, leading to increased productivity and mistake-proofing.

## [Instructions for Use]

1. Assign identification numbers to the files or items.
2. Arrange the files or items in the correct order based on the assigned numbers.

# Alphabetical coding



## Useful for S2 activities

- It helps identify files and items using the alphabet.
- It improves the speed of locating files and items, leading to increased productivity and mistake-proofing.

## [Instructions for Use]

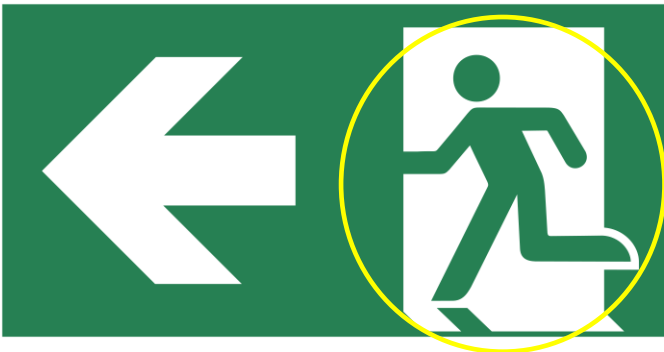
1. Assign identification letters (alphabet labels) to the files or items.
2. Arrange the files or items in the correct alphabetical order based on the assigned letters.

# Symbols/Pictogram



## Useful for S2 activities

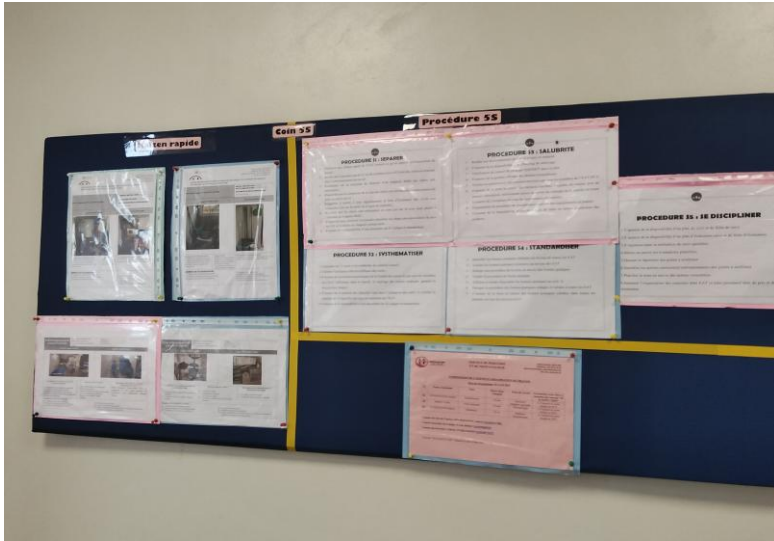
- It supports visual communication by helping everyone understand the meaning of something through marks or symbols.
- It improves communication with minimal explanation, which leads to increased productivity.



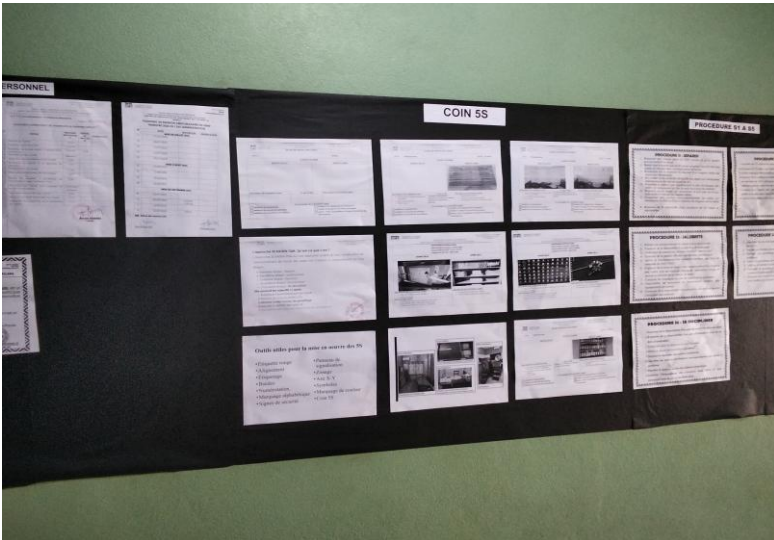
## [Instructions for Use]

1. Design or adopt appropriate marks or symbols for different items or meanings, and standardize them within your organization.
2. Display the symbols in visible locations.

# X-Y axis on Notice board



When the posted materials cover various topics and serve multiple purposes, use tape to categorize the information



When the posted materials share the same nature and purpose, you may simply apply an X-Y axis layout

## Useful for S2 and S4 activities

- It helps arrange and organize information, papers, and posters.
- It is a tool for managing information on the notice board.
- It is useful for categorizing different types of information, leading to improved productivity.

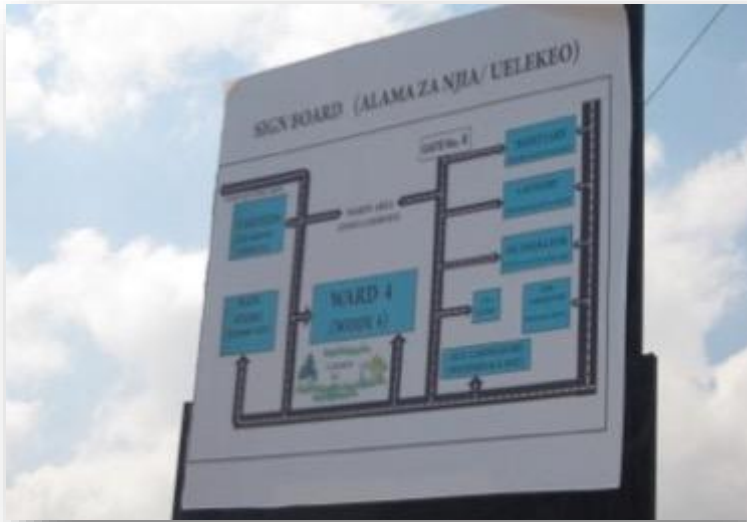
## [Instructions for Use]

1. Identify the categories of information to be displayed on the board.
2. Use tape to create sections for each category, applying an X-Y axis layout if necessary.
3. It is strongly recommended to provide clear removal instructions for the items or information displayed.

X axis (Horizontal)

Y axis (Vertical)

# Signboard



## Useful for S2 activities

- It helps guide visitors and staff to the correct locations they want to reach.
- It improves communication with minimal explanation, which leads to increased productivity.

## [Instructions for Use]

1. Develop proper signboards using clear and easily understandable language.
2. Identify appropriate locations to place the signboards where they will be visible and unambiguous.

# Color coding for categorizing files or commodities



## Useful for S2 activities

- It is used for the clear identification of files or commodities.
- It helps improve productivity and prevent mistakes.

## [Instructions for Use]

1. Decide on the colors to use and establish rules for common understanding.
2. Apply the colors to categorize the files or commodities.

# **Tools for Safety improvement**

# Safety sign



## Useful for S2 and S4 activities

- It is used to alert staff and facility users to dangerous or hazardous conditions and items.
- It helps improve the safety of staff, patients, and visitors.

## • [Instructions for Use]

1. Design or use existing safety signs appropriate for different situations and locations.
2. Place safety signs in visible and appropriate places.
3. Monitor the effectiveness of the safety signs

# Zone



## Useful for S2 and S4 activities

- It is used to identify proper places for keeping or storing items and to clearly demarcate areas.
- It helps improve productivity and safety (IPC).

## [Instructions for use]

Identify appropriate locations for storing items based on workflow and available space, and clearly demarcate these areas.

When designated items need to be moved frequently from their assigned places, zoning helps by grouping related items close together or near the point of use. This minimizes the time and effort spent searching for or transporting items, thereby improving efficiency and safety.

# Color coding with waste bins and bin liners or cleaning materials



## Useful for S2 activity

- It is used for segregating medical waste or categorizing cleaning tools by purpose.
- It helps improve the safety of staff, patients, and visitors.

## [Instructions for use]

1. Decide on the colors and their meanings according to your intended purposes.
2. Identify suitable materials for applying the colors, or obtain ready-made items in the colors you have selected.

# **Tools for sustainability**

# 5S-KAIZEN corner



## Useful for S4 and S5 activities.

- It is used for displaying the progress of 5S-KAIZEN activities, posters, and other relevant information to keep staff informed.
- It helps remind and motivate staff to sustain 5S-KAIZEN activities in the workplace.

## [Instructions for use]

1. Develop a 5S-KAIZEN corner on a notice board.
2. Select appropriate information to display.
3. Arrange the information on the board using the X-Y axis method.
4. Update the information on the board regularly.

# Information recommended to be displayed on 5S-KAIZEN corner

Kinds of information	Details
Information for increasing awareness of 5S-KAIZEN	<ul style="list-style-type: none"> <li>• Posters, Slogans, Messages for promoting 5S-KAIZEN, Committed wards in 5S-KAIZEN implementation etc.</li> </ul>
Pictorial progress report	<ul style="list-style-type: none"> <li>• Pictures before and after 5S-KAIZEN activities which can show the progress of 5S-KAIZEN</li> </ul>
Information on M&E	<ul style="list-style-type: none"> <li>• Announcement of internal M&amp;E</li> <li>• Schedule of internal M&amp;E by QIT and self M&amp;E by WIT</li> <li>• Results of M&amp;E</li> </ul>
Information on standardization	<ul style="list-style-type: none"> <li>• Instruction on standardized things, rules, disciplines etc.; announcement of hospital standard in implementation of 5S-KAIZEN</li> </ul>
Information on teaching session	<ul style="list-style-type: none"> <li>• Schedule of training/orientation/coaching etc.</li> <li>• Aims and outcomes of planned training/orientation/coaching etc.</li> </ul>
Information on action plan	<ul style="list-style-type: none"> <li>• QIT or WIT action plan(s) for Quality Improvement including 5S-KAIZEN activities</li> </ul>
Information on meetings	<ul style="list-style-type: none"> <li>• Schedule of QIT or WIT meetings</li> <li>• Agendas and minutes of QIT or WIT meetings</li> </ul>

*Any other information related with QI/QA including 5S-KAIZEN-TQM Approach*

# Combination of tools



Tools used

Labels, Zoning

Improvements

- Clearly specify designated locations for storing medicines.
- Prevent mix-ups of medicines

# Combination of tools



Tools used

Label, Numbering, Alignment

Improvements

- Arranging books and files becomes easier.
- Staff can easily follow the “Can see, Can Take Out, Can Return” principle.

# Combination of tools



Tools used

Symbol, Zoning

Improvements

- Staff can quickly access each machine from its fixed, designated location.
- All staff clearly understand where each machine should be kept

# Combination of tools



Tools used

Labeling, Zoning, Color coding

Improvements

- Staff can quickly and clearly recognize the waste-segregation system.
- All staff understand the designated location for each type of waste bin.

# 5S tools are applied on our daily work



Sources:

[https://www.medilgobiohealth.com/2022/02/cannula.html#google\\_vignette](https://www.medilgobiohealth.com/2022/02/cannula.html#google_vignette)

<https://www.wegomedical.com/what-do-color-coded-blood-collection-tubes-mean/>

[https://www.arkray.co.in/english/products/immunodiagnostic\\_products/blood\\_grouping\\_and\\_typing\\_antiseras/blood\\_grouping\\_typing\\_antiseras.html](https://www.arkray.co.in/english/products/immunodiagnostic_products/blood_grouping_and_typing_antiseras/blood_grouping_typing_antiseras.html)

# Necessary to understand the meaning of 5S activities

- Many people misunderstand that simply applying 5S tools is “doing 5S activities.”
- If you observe that a section remains at S1 to S3 for a long time, it suggests that WIT members may not fully understand the actual meaning of “5S activities.”
- It is important to understand correctly that **5S tools are only means**. They must be used to achieve the **true purpose of 5S activities**, which is to:
  - Reduce waste (7 wastes)
  - Improve productivity, safety, and mistake-proofing

# Visual Control Method

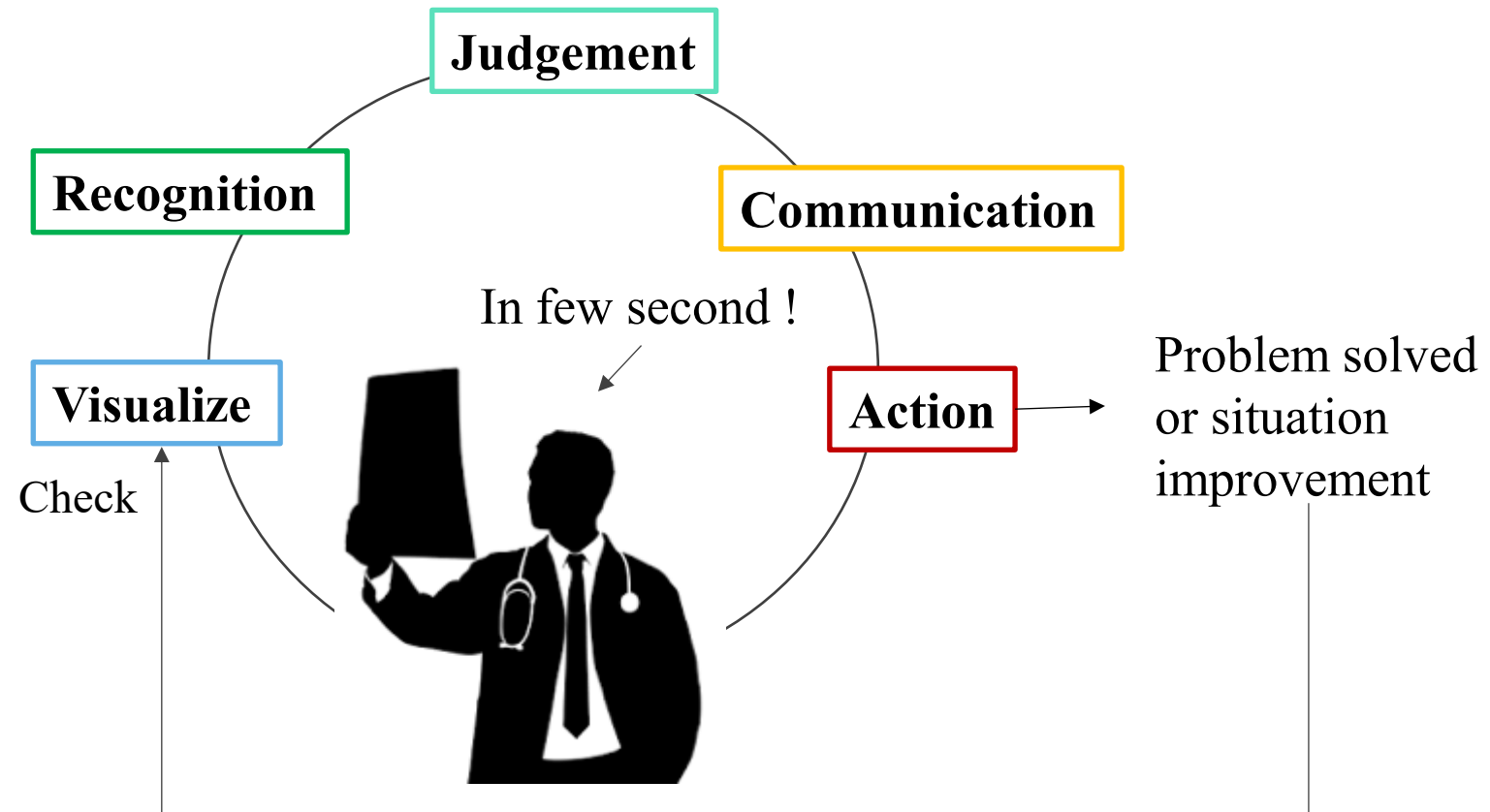
# What is Visual Control?

- The purpose of visual control is to increase the efficiency and effectiveness of work and to create an error-proof environment that promotes easy adherence to standards.
- Visual controls are designed to show the operating or progress status of an activity in an easy-to-see format, as well as to provide instructions and convey important information.
- Visual control is closely related to our daily life, and many of the tools used in 5S are forms of visual control.

# Mechanism of Visual control method

**A method that enables you to:**

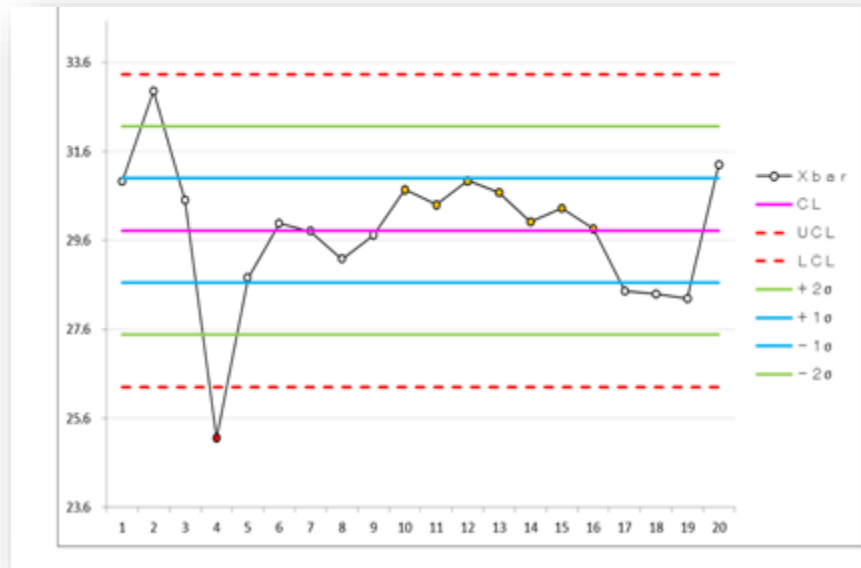
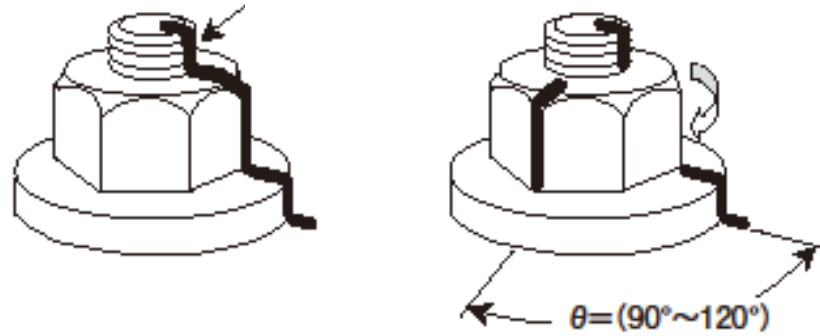
- Identify the condition or status of something immediately just by looking at it
- Take necessary actions for improvement



# What to be visualized?

- **Visualize abnormalities**  
so that staff can quickly respond and prevent problems from occurring.
- **Visualize tacit knowledge**  
so that it can be shared and transferred to others.
- **Visualize organizational policy**  
to build an organization where individual wisdom is shared and collaborative action is possible.
- **Visualize the organization's growth objectively**  
to evaluate whether the measures being implemented are effective.
- **Visualize the current status of work**  
to confirm and adjust actions as needed to achieve the intended purpose.
- **Visualize waste**  
so that staff can clearly recognize what adds value for customers and understand how their work contributes to that value.

# Example of “Visualize abnormalities”



Picture source:

[https://colin.fukuda.co.jp/products/pf002/details-feature.html?product\\_id=66](https://colin.fukuda.co.jp/products/pf002/details-feature.html?product_id=66)

[https://with.sonysonpo.co.jp/wisdom/drive/detail\\_229353.html](https://with.sonysonpo.co.jp/wisdom/drive/detail_229353.html)

<http://www.bolten.co.jp/products/product/101-detail>

# Example of "Visualize tacit knowledge"

Transform tacit knowledge to data and information



# Example of “Visualize the current status” for improvement of IPC



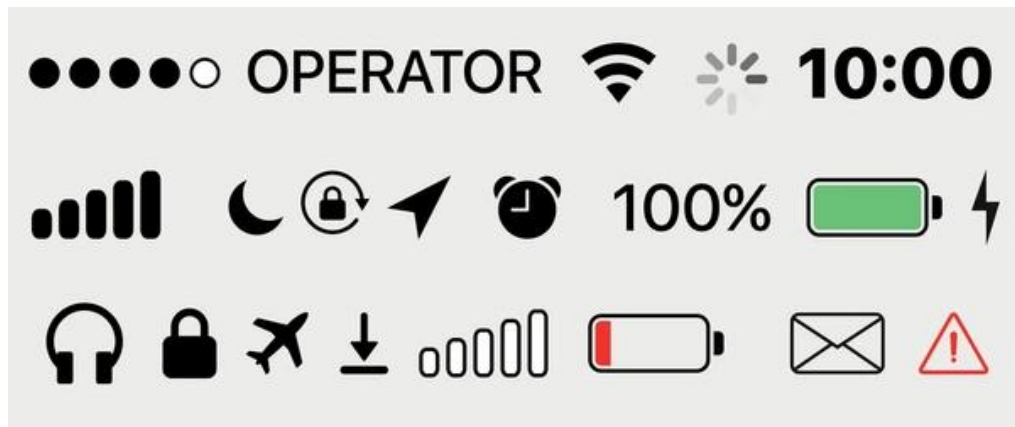
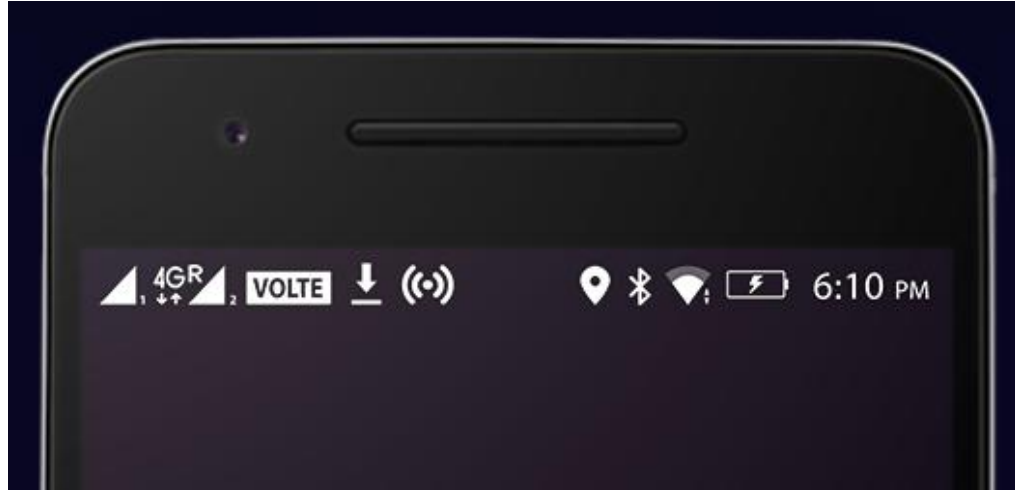
Color coding makes it easy to understand waste-segregation categories and other IPC practices.

 or  for general

 for infected

 for highly infected

# Example of “Visualize the current status”



Mobile phone status icons

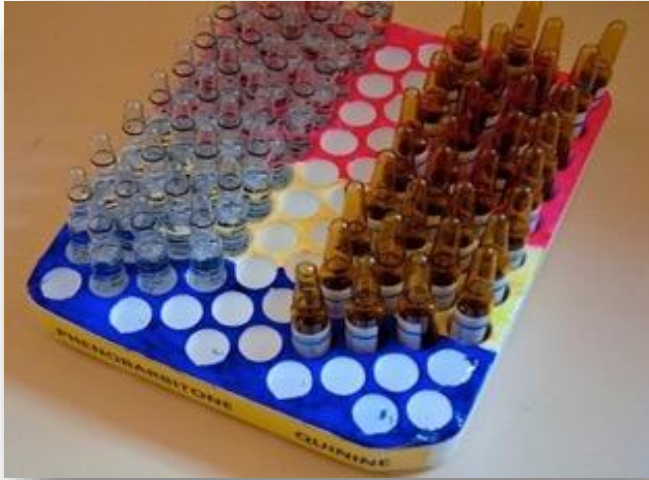


# Example of visual control for traffic control by symbols and safety signs

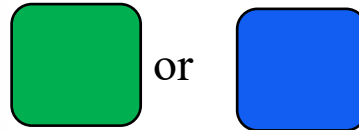


- Communication becomes easy through clear signs and symbols. In this example, the signs help control the movement of people without requiring verbal instructions or permission.

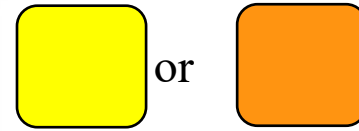
# Example of “Visualize the current status” for improvement of “Stock management”



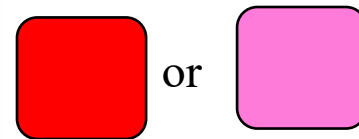
- Color coding makes it easy to understand the stock levels of commodities.



Enough stock



Warning on getting less stock

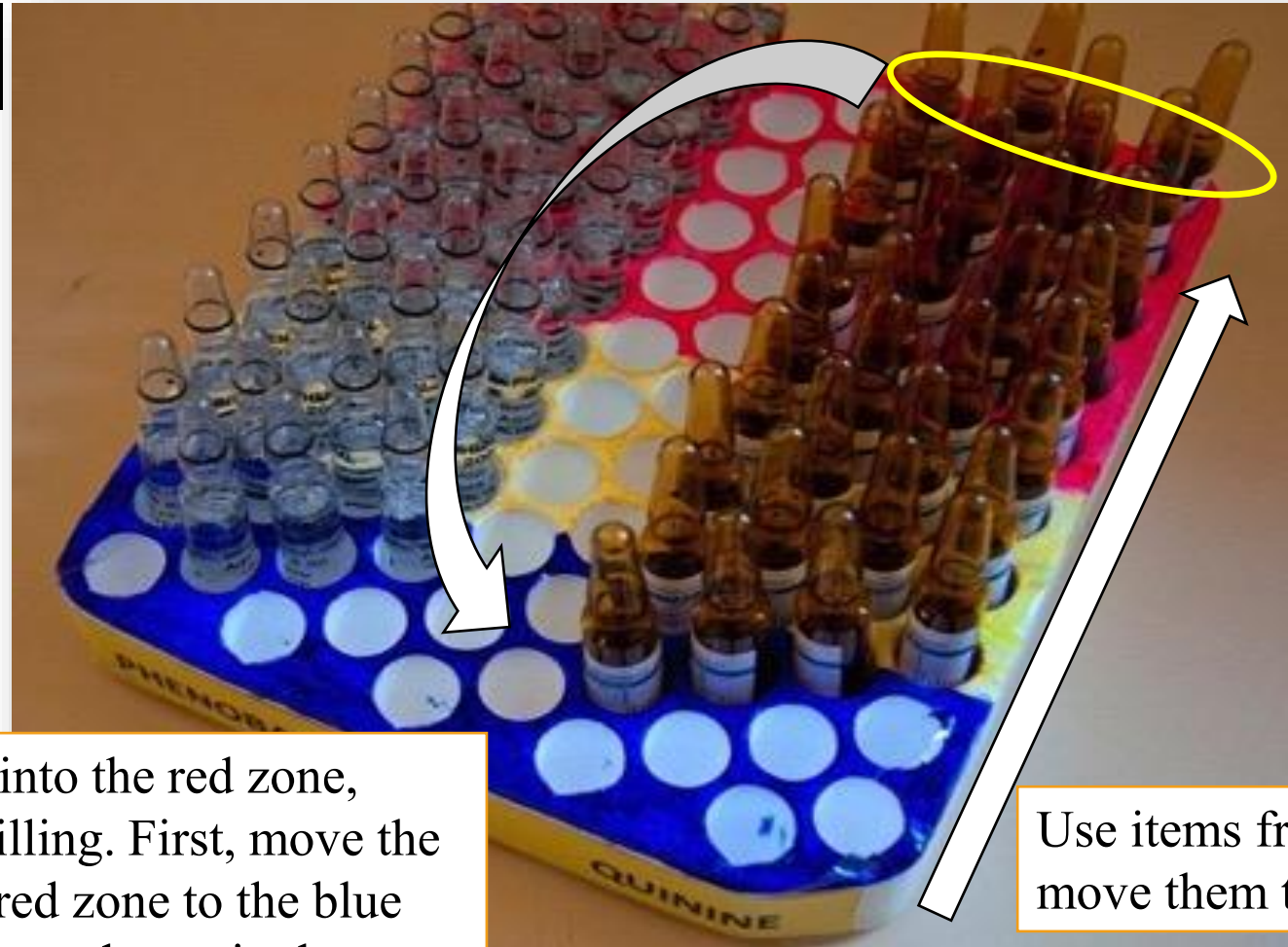


Need to refill immediately



# If you apply color coding for stock management need to follow FIFO (Frist in Frist out) concept

## Example



The stock level has fallen into the red zone, indicating the need for refilling. First, move the remaining items from the red zone to the blue zone. Then, refill the items as shown in the picture.

Use items from the blue zone and move them to the red zone

# If you apply color coding for stock management need to follow FIFO (Frist in Frist out) concept

## Example

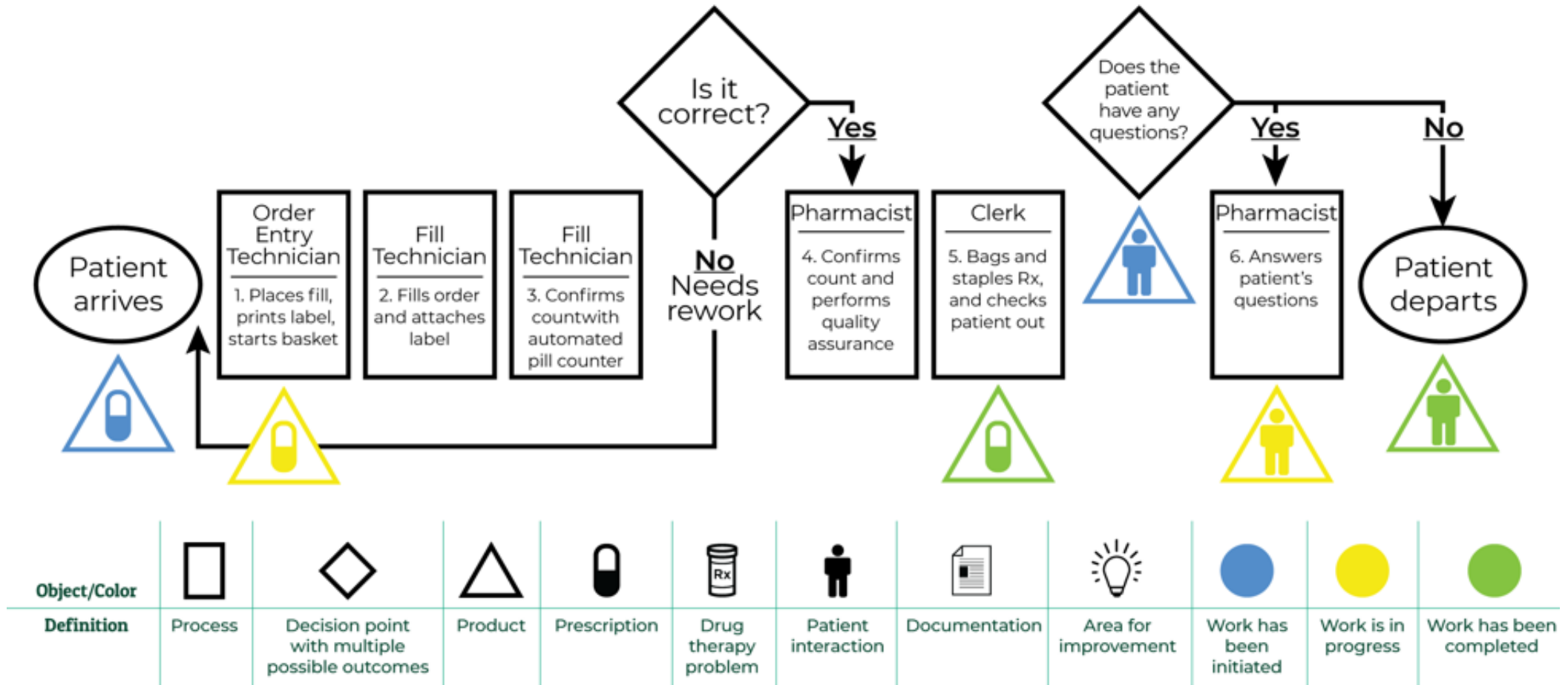
Use items from the green shelf and move them to the red shelf.



The stock level has reached the red shelf, indicating the need for refilling. First, move any remaining items from the red shelf to the green shelf. Then, restock the items based on the required quantity for each shelf.

# Example of “Visualize waste” (recognize the value and waste by using Value Stream Mapping)

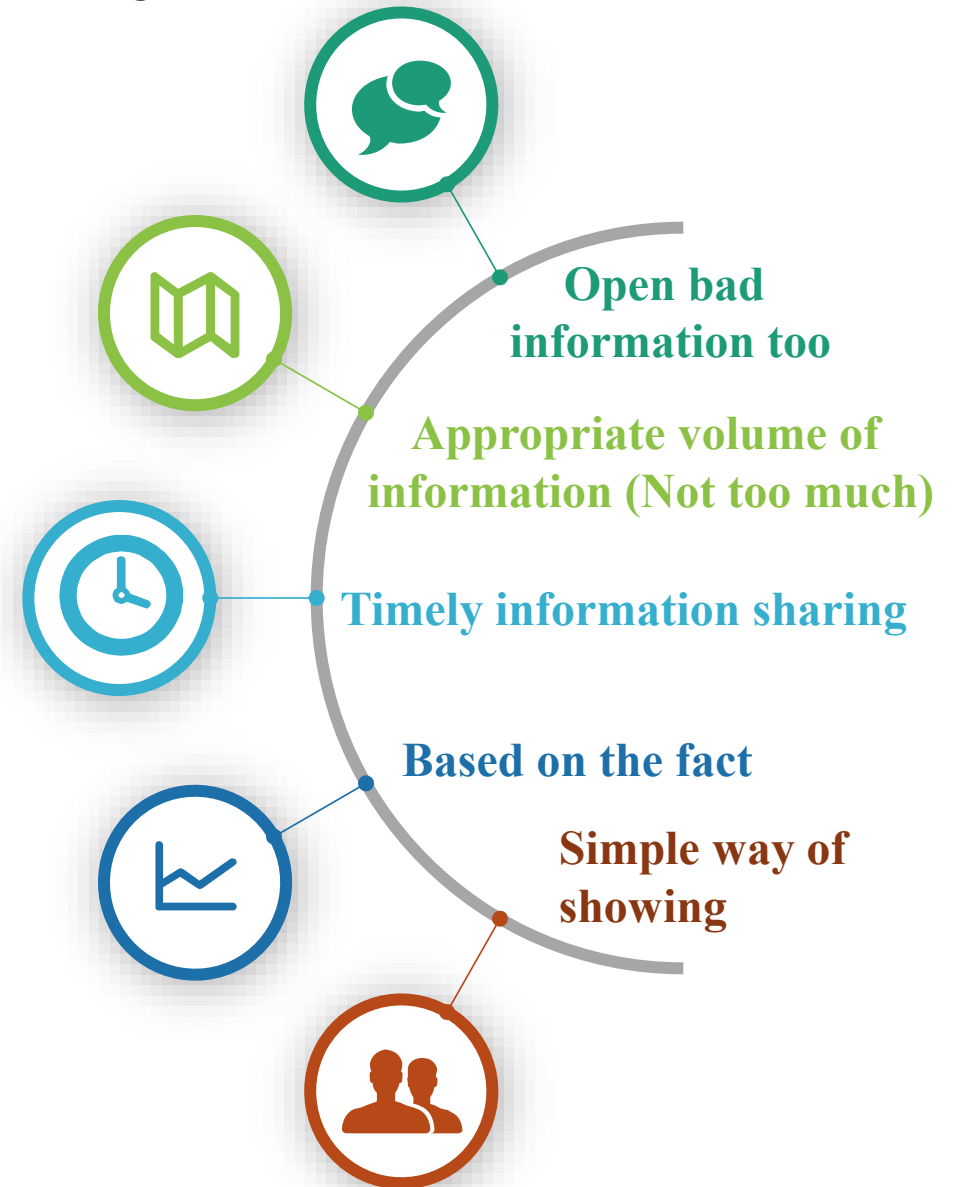
## Refilling a Prescription for a Waiting Patient



Source: <https://wp.media.unc.edu/changemgmt/valuestream/>

# Tips for introduction of Visual Control

- Providing the necessary information to people when they need it (Just-in-time provision of necessary information)
- When introducing the Visual Control method, the following points need to be considered:
  - Is the information that is truly needed being visualized?
  - Is the method of visualization well designed from the user's point of view?
  - Is the information visualized in a way that makes users clearly aware of problems?



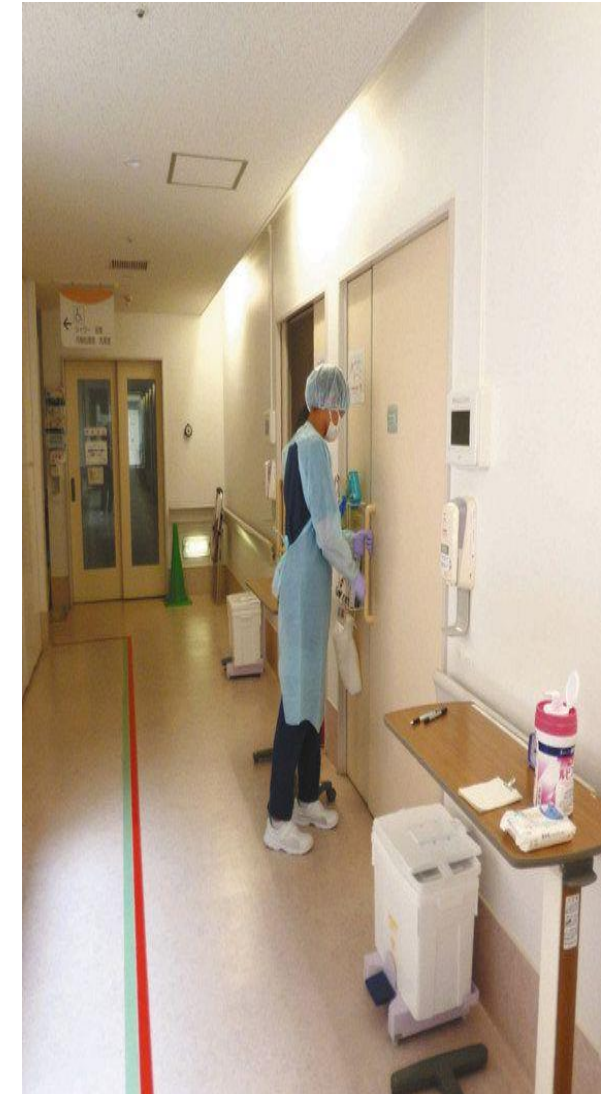
# Benefit of using Visual Control in your workplace

- Make problems visible to everyone → corrective actions can be taken immediately
- Display operating or progress status in an easy-to-see format
- Save time spent searching for items or locations
- Manage items, materials, and stock easily → reduces the need for frequent inventory checks
- Obtain a common understanding of rules and regulations

# 5S tools and visual controls are applied for IPC

## 5S tools are “visible.”

- Visual control is one of the most effective tools for IPC activities. “Easy to see,” “easy to understand,” and “easy to follow” approaches improve the efficiency and safety of work among health workers.
- Applying **5S tools and activities** is very useful for strengthening visual control in IPC.



# How 5S approach strengthen IPC

	IPC Contribution	Example
<b>Sort (S1)</b>	Removes unnecessary, contaminated, or expired items	Removing expired disinfectants
<b>Set (S2)</b>	Prevents cross-contamination	Color-coded bins, shadow boards
<b>Shine (S3)</b>	Ensures cleanliness & early detection	Daily cleaning checklists
<b>Standardize (S4)</b>	Harmonizes IPC procedures	PPE workflow posters
<b>Sustain (S5)</b>	Maintains compliance	Regular audits, SOP display

# Thank You!

Any question, comments, clarification you need?



The 5S-KAIZEN-TQM approach training materials

# Sustainability of the 5S activities

## “What should be done in S4 and S5”

Japan International Cooperation Agency  
Fujita Planning Co., Ltd.



# Objectives

At the end of this lecture, the participants will be able to;

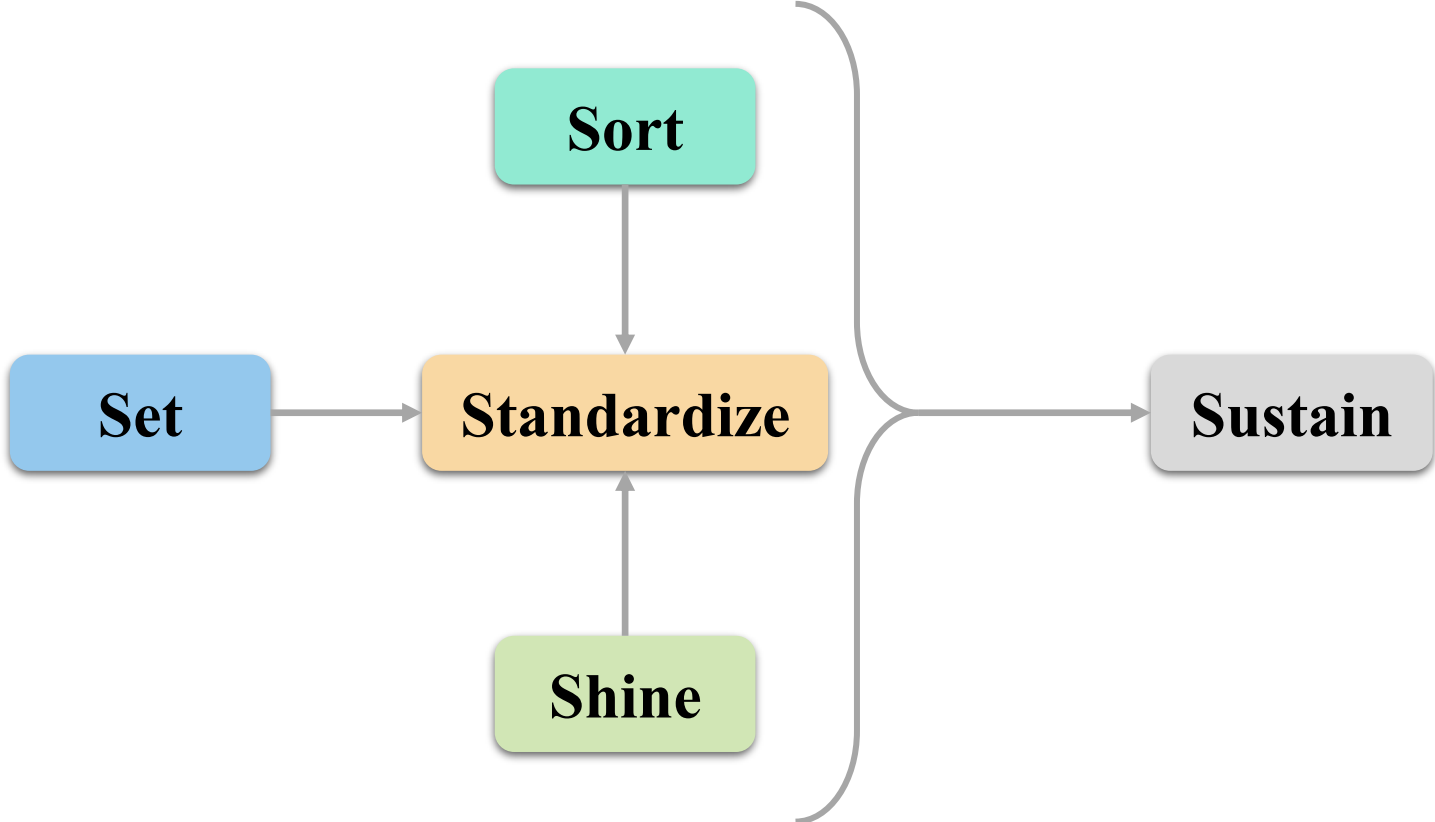
- Explain what should be standardized in S1, S2 and S3
- Explain what should be sustain to practice 5S activities in sustainable manner

# Fact!

Many health workers implementing the 5S approach are facing difficulty to implement S4 and S5 activities, and the 5S activities are often fail to sustain.



# 5S conceptual framework



# The most common problems in S4 and S5 implementations

- The most common problem is that the standards established in S4 are not maintained in the long term when the implementers do not perceive clear benefits.
- The discipline required to keep S4 updated tends to decline gradually over time, leading to “fallback.”
- Another reason why 5S often becomes only a temporary phenomenon is that it is viewed as a standalone project or activity, rather than being fully integrated into the daily management of work.

# S4: Standardization

- Once the first three S's have been implemented, the next pillar is to standardize the best practices in the work area.
- Standardization—the method for maintaining the first three pillars (S1–S3)—creates a consistent approach to how tasks and procedures are carried out.
- The three steps in this process are:
  1. assigning Sort, Set, and Shine as part of each staff member's job responsibilities,
  2. integrating 5S activities into regular work duties, and
  3. checking and monitoring the maintenance of 5S activities

# What need to be “standardized” for S1?

- The following points need to be standardized across the entire health facility:
  - Sorting rules and criteria
  - Rules for repair, replacement, and recycling
  - Methods for inventorying unnecessary items
  - Establishment and management of the storage area for unnecessary items

# Criteria for "discarding"



Categorize all medical equipment, tools, files, furniture, office equipment etc. in your work place into the 3 categories mentioned on the right



Items that are necessary for current work process

Move to "S2: Set"



Items that use occasionally

Store them in the section After maintenance, and use them when needed

Unnecessary item inventory  
Rules for repair, replace and recycle



Items that are not necessary for current work process

Establish "Unnecessary items store" to keep the items

If repairable, send them to workshop

# Criteria for "discarding"

Items	Rules for discarding (examples)	
Documents/Papers	<ul style="list-style-type: none"> <li>Document, which is not used in the past one year</li> </ul>	
Tools	<ul style="list-style-type: none"> <li>Tool, which is broken and cannot use</li> </ul>	
Equipment	<ul style="list-style-type: none"> <li>Equipment, which is out of order and cannot repaired</li> </ul>	If it is repairable, send it to workshop and fix it
Furniture	<ul style="list-style-type: none"> <li>Furniture, which is out of order and cannot repaired</li> </ul>	If it is repairable, send it to workshop and fix it
Parts	<ul style="list-style-type: none"> <li>Parts, which is no longer needed for repair as the item is no longer used</li> </ul>	Ask other departments/sections or other hospitals is need
Commodities	<ul style="list-style-type: none"> <li>Commodities and medicines which are expired.</li> </ul>	

All discarding items must be registered, and develop unnecessary inventory list

# What need to be “standardized” for S2?

- The flow of work differs from one section to another. Therefore, the arrangement of necessary items cannot be standardized across the entire hospital.
- **The following points can be standardized hospital-wide:**
  - Inventory management of items
  - Use of 5S tools (e.g., labeling size and font, pictograms/symbols, color coding of waste bins)
- **The following points need to be standardized at the department/section level:**
  - Placement of necessary items and the agreed set of rules (e.g., the 3F principles: fixed items, fixed place, and fixed numbers)
  - Checking/monitoring of daily 5S activities
  - Checklist for handover between shifts

## Handing over of shift and checklist



Source: <https://rcni.com/nursing-standard/features/how-to-make-handovers-more-effective-141126>

## Placement of necessary items and agreed set of rules



What should be on which shelf, and how many are supposed to be on the shelf

# What need to be “standardized” for S3?

The following points need to be standardized across the entire health facility:

- Waste management
  - Color coding of waste bins and bin liners
  - Color coding of waste dumping areas
- Storage methods for cleaning materials
- Color coding of cleaning tools and their storage locations
- Cleaning schedules and checklists



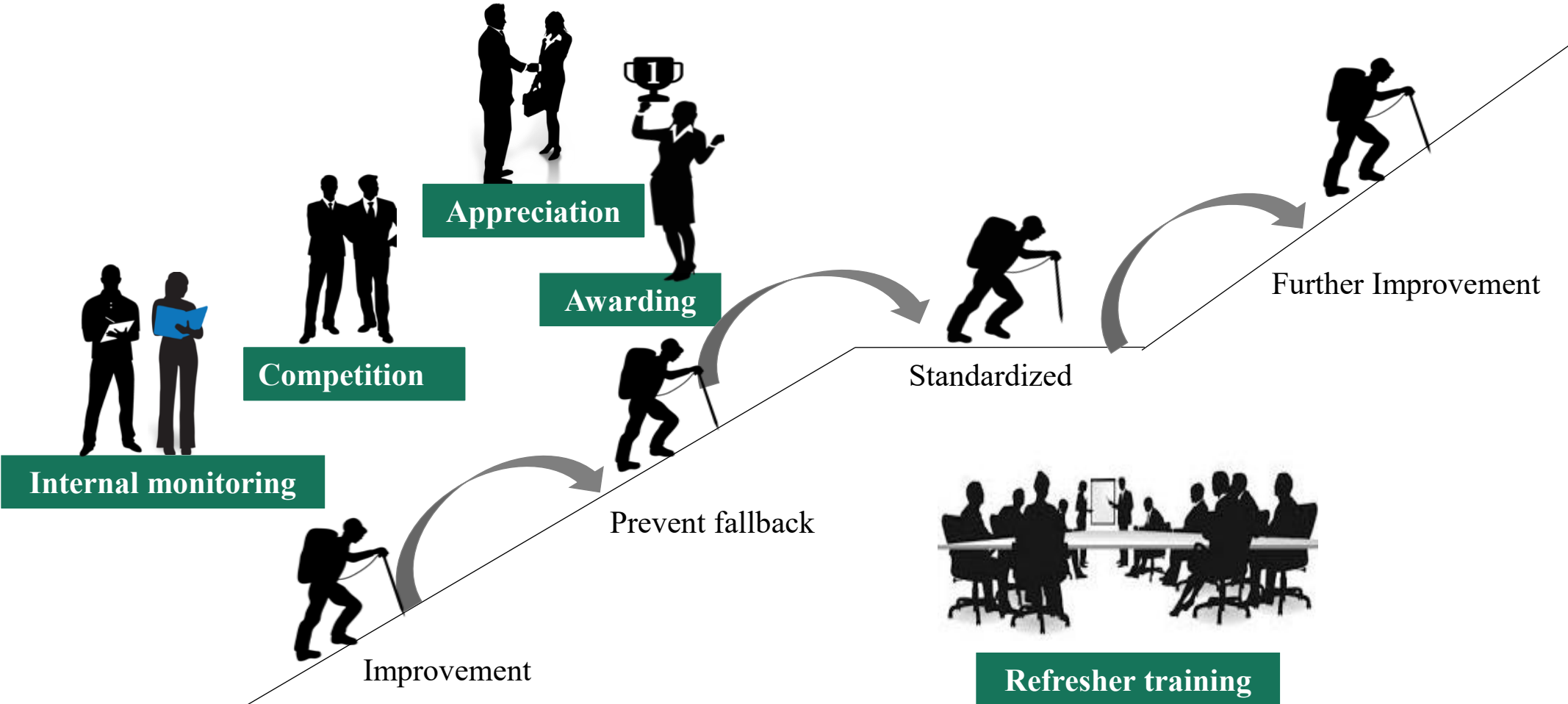
# S5: Sustain

- S5 (Sustain), which involves making a habit of properly maintaining correct procedures, is often the most difficult pillar to implement and achieve.
- Changing entrenched behaviors can be challenging, and there is a strong tendency to revert to the status quo or the “old way” of doing things.
- S5 (Sustain) focuses on establishing a new status quo and standard for workplace organization. Without this pillar, the achievements of the other pillars will not be sustained in the long term.

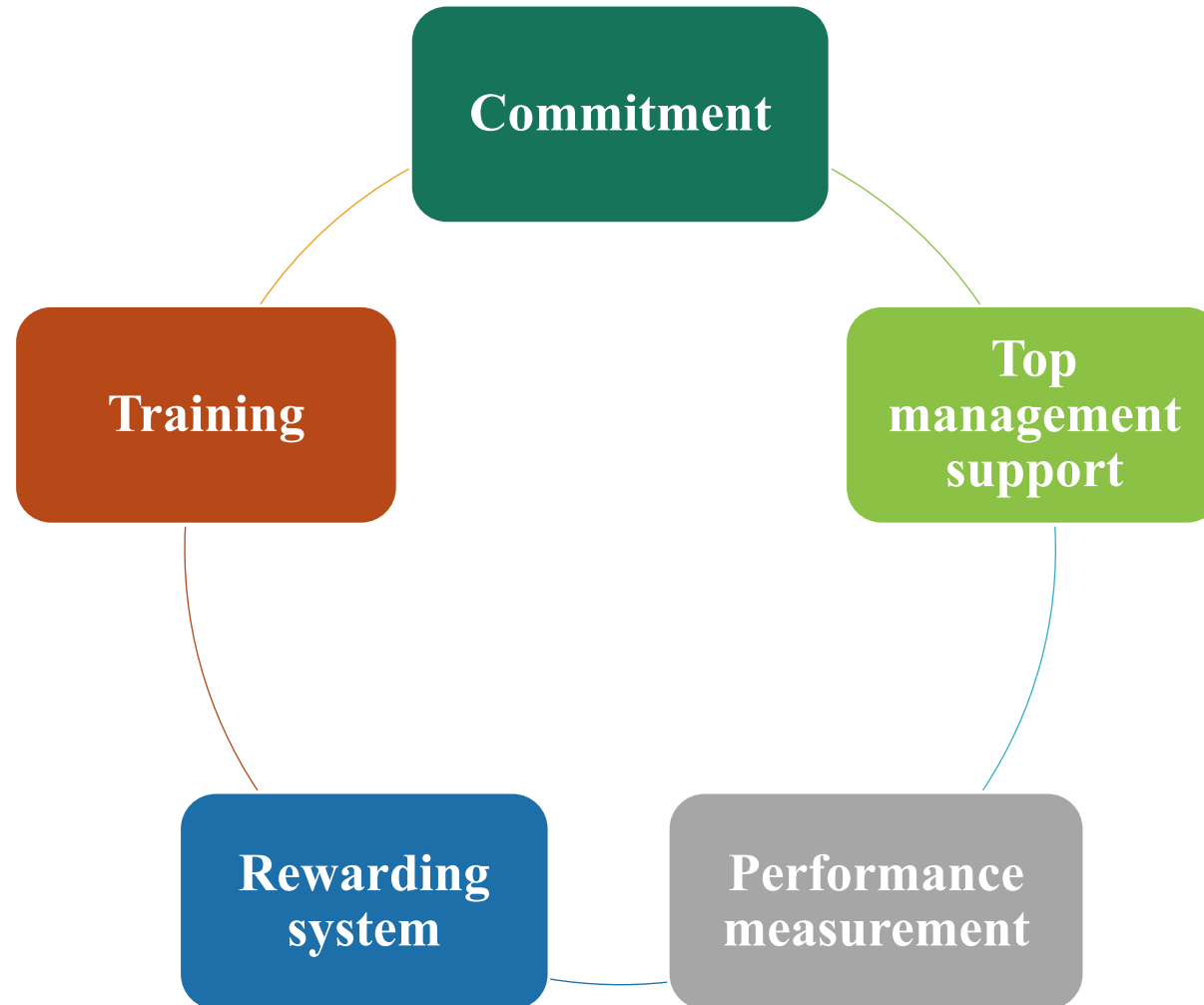
# Examples of activities for S5 (Sustain)

## Key for Sustain activities

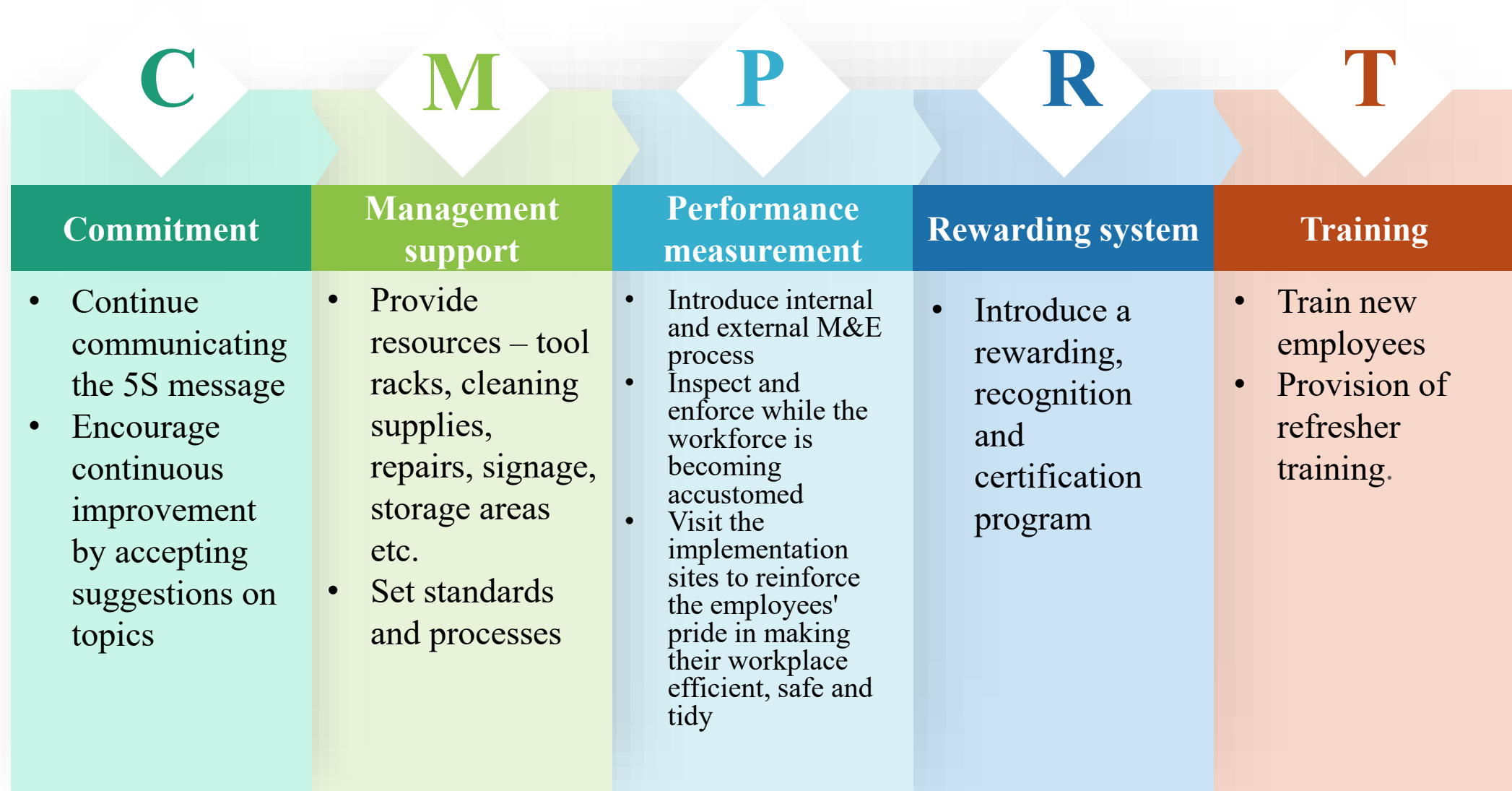
- People get bored if no changes. Then, stop practicing 5S activities. Need to develop a mechanism to make staff excited and motivated



# Five key elements for S5 (sustain) activities



# Five key elements for S5 (sustain) activities



# Useful tools for S5 (sustain)

Useful tools	Purpose
5S-KAIZEN corner	To visualize the communications on 5S activities
Message and Storytelling boards	To share good practice of 5S activities
Scoreboards and Rader chart	To visualize the progress of 5S activities
Slogan	To remind and clarify the goals and objectives of 5S activities
Banners and Posters	To remind staff to practice 5S activities

# Benefits of S4 and S5

- Because less time is wasted searching for materials, employees experience less stress and overall job satisfaction increases.
- As problems become visible at an early stage, managers spend less time firefighting and can devote more time to structurally improving processes and developing their team members.
- Finally, when implemented effectively, 5S leads to measurable improvements in quality and delivery reliability—benefits that clients can also experience.
- This means that even a simple tool like 5S can have a significant impact on your facility.

# Thank You!

Any question, comments, clarification you need?



**The 5S-KAIZEN-TQM approach training materials**

# **How to conduct the 5S practical session**

**Japan International Cooperation Agency  
Fujita Planning Co., Ltd.**



# Preparation of the practical session

## 1. Determine the setting for the 5S training.

The following settings are commonly used for the practical session:

- Bedside trolley
- Laboratory specimen collection / phlebotomy area
- Emergency trolley
- Ward storeroom
- Office desk
- Cleaning materials storage area

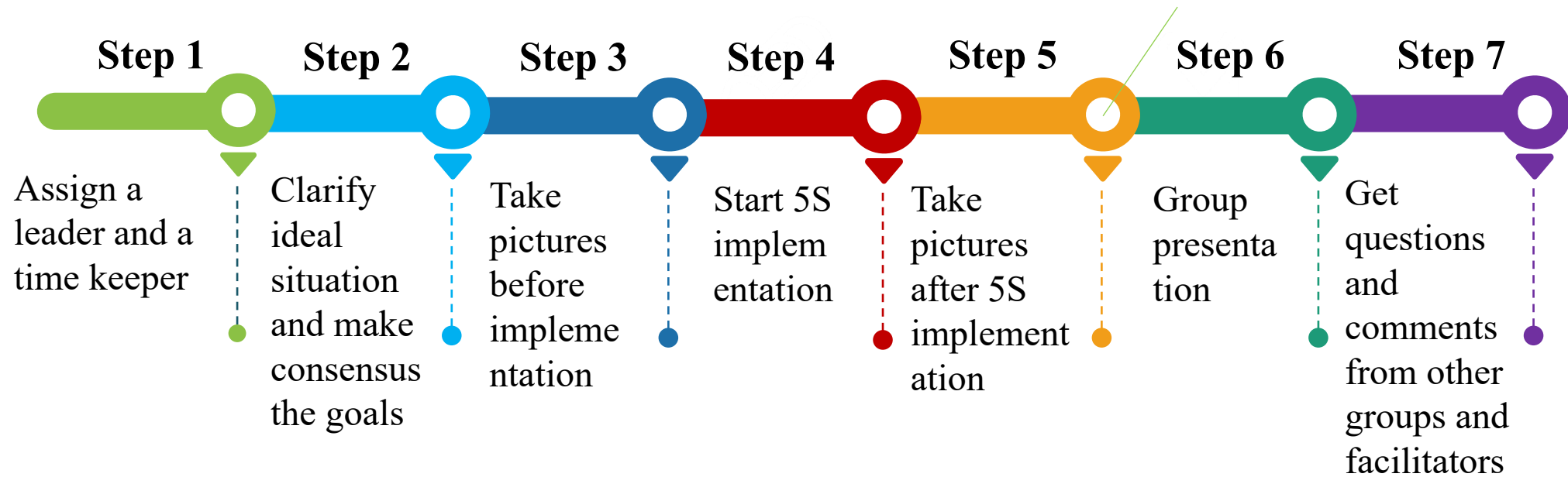
The number of settings required will depend on the number of groups participating in the training

# Preparation of the practical session

## 2. Prepare Necessary Items for the Practical Session

- The items to be prepared will vary depending on the selected 5S training setting (e.g., syringes, specimen collection tubes, empty medicine containers and boxes, bottles, gloves, etc.).
- Prepare desks, shelves, trolleys, and other materials according to the requirements of the practical session.

# Summary of steps of the practical session



5 minutes	60 minutes	60 minutes
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# Steps of 5S practical session (1)

- **Step 1: Assign a “Group Leader” and a “Timekeeper”**
  - The *Group Leader* leads the practice smoothly and facilitates effective discussions during the session.
  - The *Timekeeper* manages the time and records all 5S activities conducted, as well as the key lessons learned during the practice.
- **Step 2: Take “Before” Pictures Prior to 5S Implementation**
  - Take photos of the assigned area from several angles.
  - Avoid taking pictures too close to the target objects.
  - Remember that the purpose of taking photos is to clearly capture the condition before the 5S implementation.
- **Step 3: Discuss the Ideal Arrangement of “Your Workplace”**
  - Discuss with group members the ideal arrangement of the assigned setting (“your workplace”).
  - Reach a consensus among all members before proceeding with the practice.

# Steps of 5S practical session(2)

## **Step 4: Start 5S Activities**

- Begin the 5S activities based on the assigned setting, applying the knowledge and techniques learned during the lectures.

## **Step 5: Take “After” Pictures**

- Take photos after completing the 5S implementation to capture the improvements made.

## **Step 6: Conduct an Oral Presentation**

- Present the results of your 5S implementation.
- Emphasize the benefits gained through the 5S process by comparing the situation before and after implementation.
- Listen carefully to other groups' presentations.
- Avoid blaming one another.
- Provide constructive and practical technical advice for further improvement.
- Engage in positive, solution-oriented discussions.

## **Step 7: Receive Feedback**

- Receive questions and comments from other groups and facilitators to identify opportunities for further improvement



# Presentation of group work

- After completing the practical session, all groups will present their work.
- Each group should nominate a presenter to deliver the presentation.  
Then, each group will present their practical work to the participants.
- After each presentation, the facilitator will invite other members of the same group to provide any additional explanations.
- Next, the facilitator will ask participants from other groups if they have any questions, comments, or clarifications.

Respect each group's work during the presentation session. Do not criticize; instead, offer constructive suggestions for improvement.

When asking questions or giving suggestions, start with positive words. This technique is very important when conducting monitoring and evaluation of 5S activities.



# Comments from the facilitator's point of view (1)

- After each group's presentation and the question-and-answer session with participants, facilitators should provide comments aimed at improving the 5S activities.
- When facilitators make comments, they should consider the following points:
  - One of the major purposes of the 5S activity is to create an “**easy-to-work**” **environment** in the workplace. Therefore, an important observation point is whether efforts have been made to create such an environment.
  - Since Training of Trainers (ToT) sessions are often conducted in a classroom setting, the first step is to **understand** the setting selected by each group.

# Comments from the facilitator's point of view (2)

The facilitator will observe each group's practice and evaluate their performance based on the following points:

- Is there a clear distinction between necessary and unnecessary items?
- Are necessary items easily accessible to anyone when needed?
- Are existing resources utilized effectively?
- Has consideration been given to efficiency and mistake-proofing?



# Comments from the facilitator's point of view (3)

- Are 5S tools applied effectively and efficiently?
  - **Labels:** Are they easy to see and understand? (e.g., label size, font size, placement, and alignment of labels with items)
  - **Color Coding:** Is it meaningful? (e.g., clear meaning for each color used, consistent understanding of color meanings among staff)
  - **Zoning:** Is it effective? (e.g., clearly indicating item placement and defining work areas)
  - **Symbols and Signs:** Are they meaningful? (e.g., conveying messages at a glance, guiding people without verbal instructions)
- Are ergonomics and the 3Fs principles (Fixed Place, Fixed Items, and Fixed Numbers) applied effectively to improve productivity?
- Are measures in place to keep the workplace clean?
- Is there a mechanism to detect abnormalities during 5S activities?
- Is there a system in place to maintain and manage the 3Ss? (e.g., cleaning schedules, handover checklists, etc.)

# Thank You!

Any question, comments, clarification you need?



The 5S-KAIZEN-TQM approach training materials

# What is KAIZEN in health sector?

“Overall concept of the KAIZEN approach”

Japan International Cooperation Agency  
Fujita Planning Co., Ltd.



# What is “KAIZEN” ?

The image shows the Japanese characters for 'Kaizen' (改善) written in a bold, black, calligraphic style. The characters are arranged vertically, with '改' (Kai) on top and '善' (Zen) on the bottom. A large, thin, black bracket is positioned below the characters, spanning from the left side of the '改' character to the right side of the '善' character.

KAI = Change

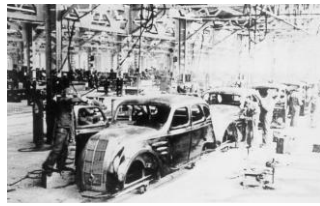
ZEN = better

It means “Change for better”

- It is, broadly speaking, a concept of continuous improvement. ‘Kai’ means ‘change’ and ‘Zen’ means ‘for the better.’
- It is a philosophy that helps ensure maximum quality, the elimination of waste, and improvements in efficiency—both in terms of equipment and work procedures



# The History of KAIZEN



Manufacturing sector started to apply KAIZEN in the late 1980

Late 1890's improve productivity at Ford's manufacturing line

Time and Motion study by Tylor and Gilbreth in early 1900's influenced Ford

Ford method helped for Mass production system

Sakichi Toyoda and Kiichiro Toyoda learned and inspired from Ford and add original idea such as JIT, Jidouka etc.

Toyota Production System is developed between 1945-1978  
Published official description of TPS in 1992

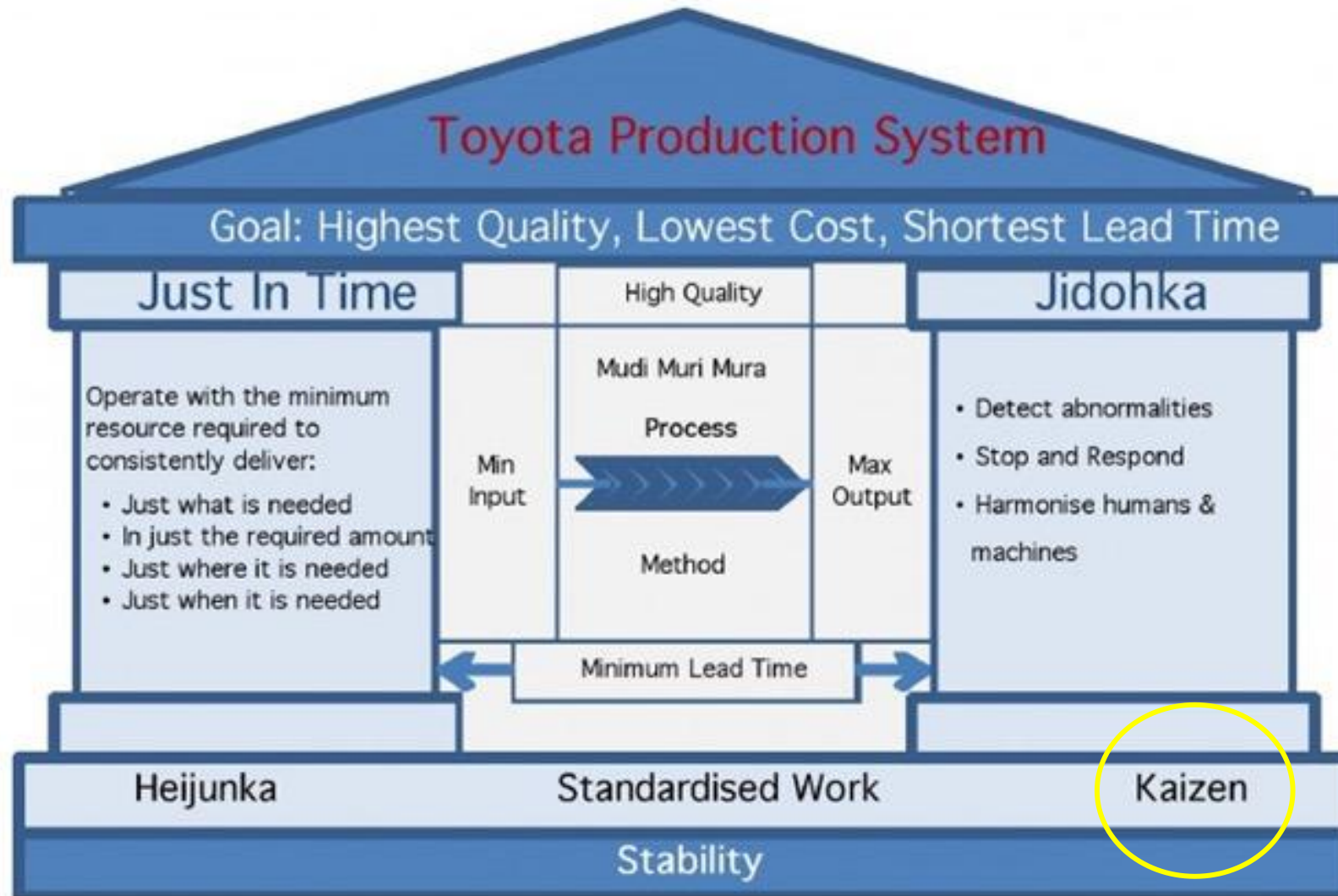
Service industries started to apply KAIZEN in the beginning of 2000

Now, KAIZEN is widely applied in health sector

[https://en.wikipedia.org/wiki/Toyota\\_Production\\_System](https://en.wikipedia.org/wiki/Toyota_Production_System)

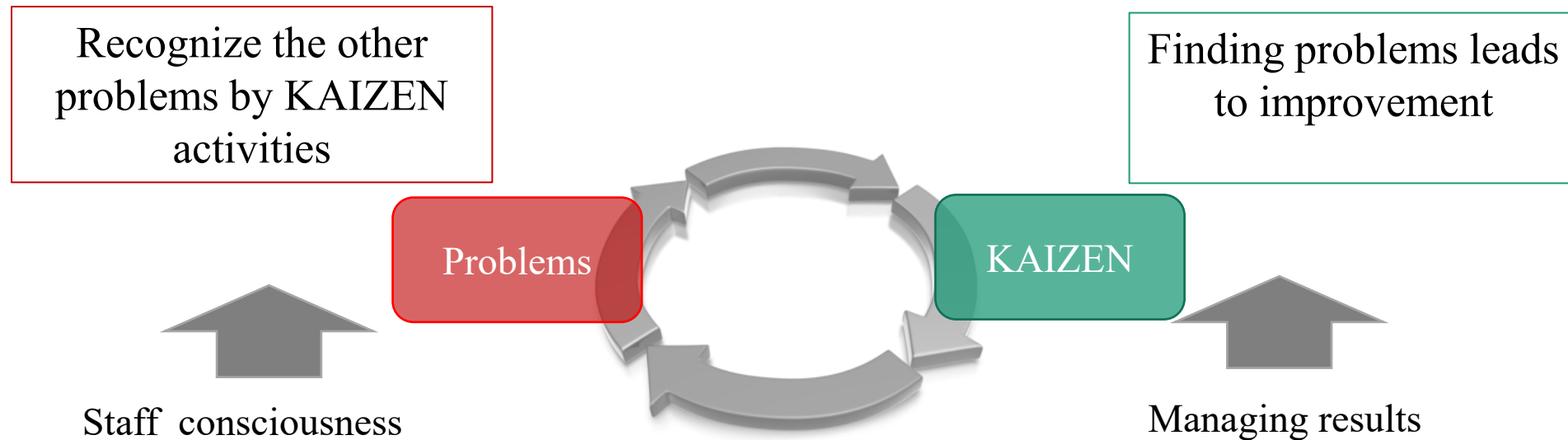
<http://leanmanufacturingtools.org/49/history-of-lean-manufacturing/>

# KAIZEN is the foundation of Toyota Production System



# Basics of KAIZEN

- Being aware of the problems within the organization, recognizing that you share responsibility for them, and taking proactive initiative to address them will lead to better overall management of the organization



# Why “KAIZEN” is needed

- KAIZEN refers to the act of reviewing the purpose and processes of work, identifying problems, and improving productivity by solving those problems.
- With many industries facing human resource shortages, it will be difficult to survive in the future without improving individual productivity and streamlining operations. Moreover, management can be strengthened by continually reviewing and improving day-to-day operations and work processes.
- Healthcare is constantly evolving, and the quality of healthcare services will not improve unless organizations respond effectively to these changes.

# KAIZEN vs KAIKAKU

## Difference between improvement and innovation



### **KAIZEN** (continuous improvement)

Kaizen is evolutionary,  
focused on incremental  
improvement

An “improvement” is a positive view of the current system’s capabilities and an effort to make the system more efficient and effective.

On the other hand, “innovation” involves rejecting the current system’s functions and attempting to renew or replace them



### **KAIKAKU** (Innovation)

Kaikaku is breakthrough rapid improvement, radical improvement of any activity,

# KAIZEN:

## Taking action to reduce the "gap" for improvement

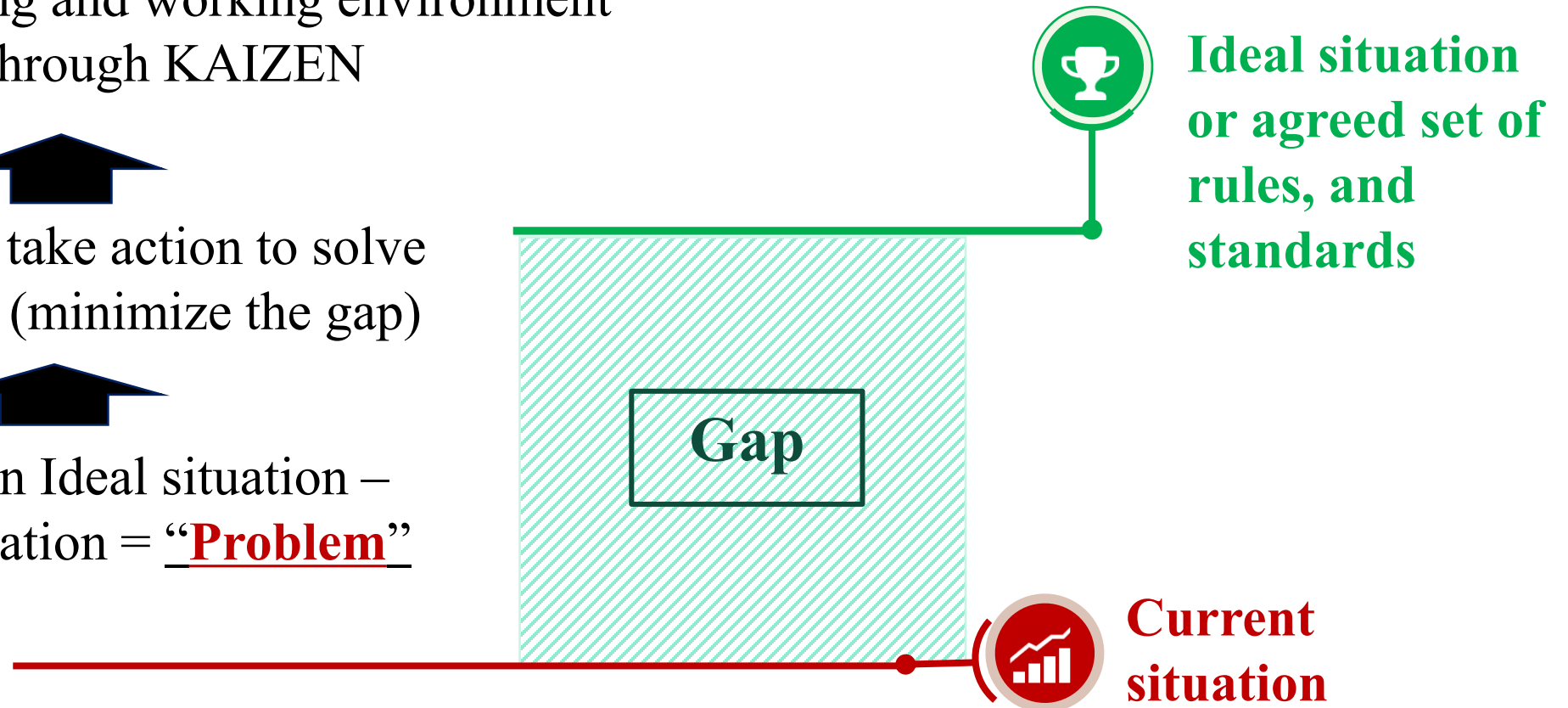
Improve organization management,  
problem-solving and working environment  
improvement through KAIZEN



Necessary to take action to solve  
the problems (minimize the gap)

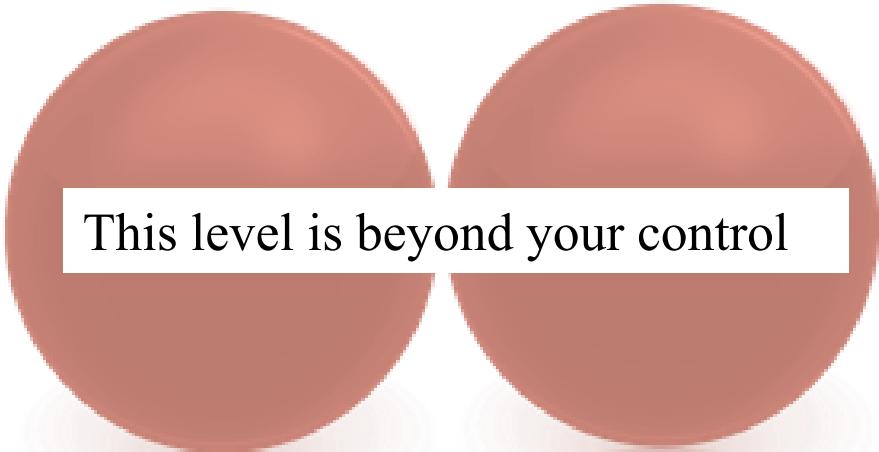


Gap between Ideal situation –  
Current situation = **“Problem”**



# “Level” of problem

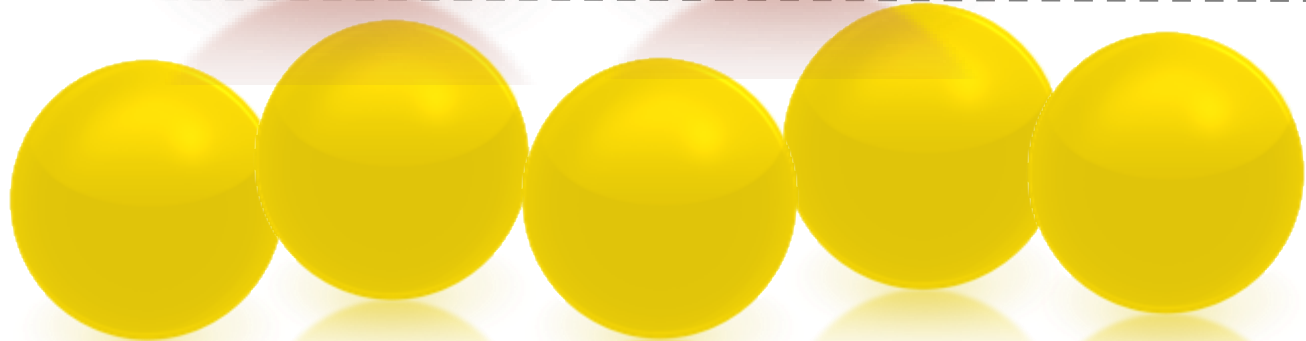
10% of total problems  
Large size problems



This level is beyond your control

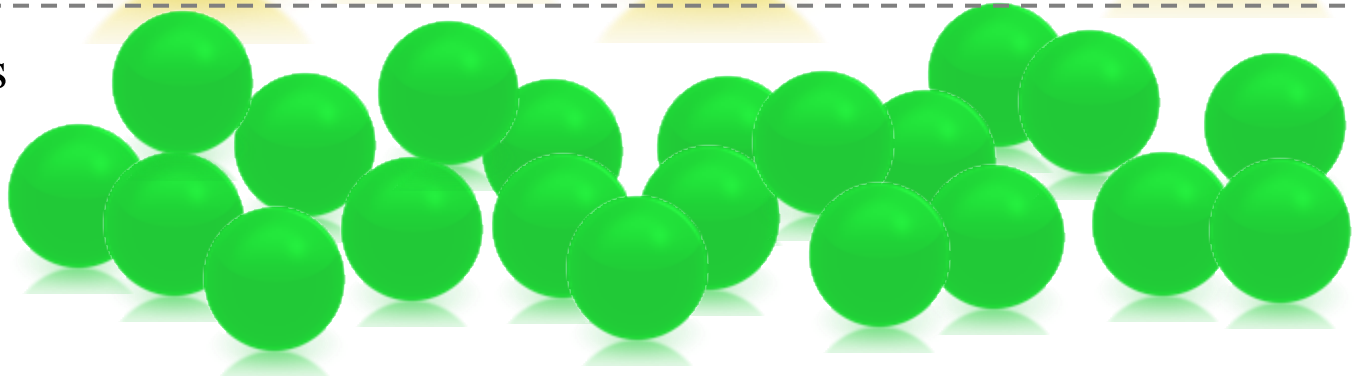
National issues

30% of of total problems  
Middle size problems



Issue at  
Facility level

60% of of total problems  
Small size problems



# Composition of problem

## Large problem

A “large problem” is composed of several contributing factors, which means it is complex.

**Many contributing factors**



Big house is complicated to built!

## Small problem

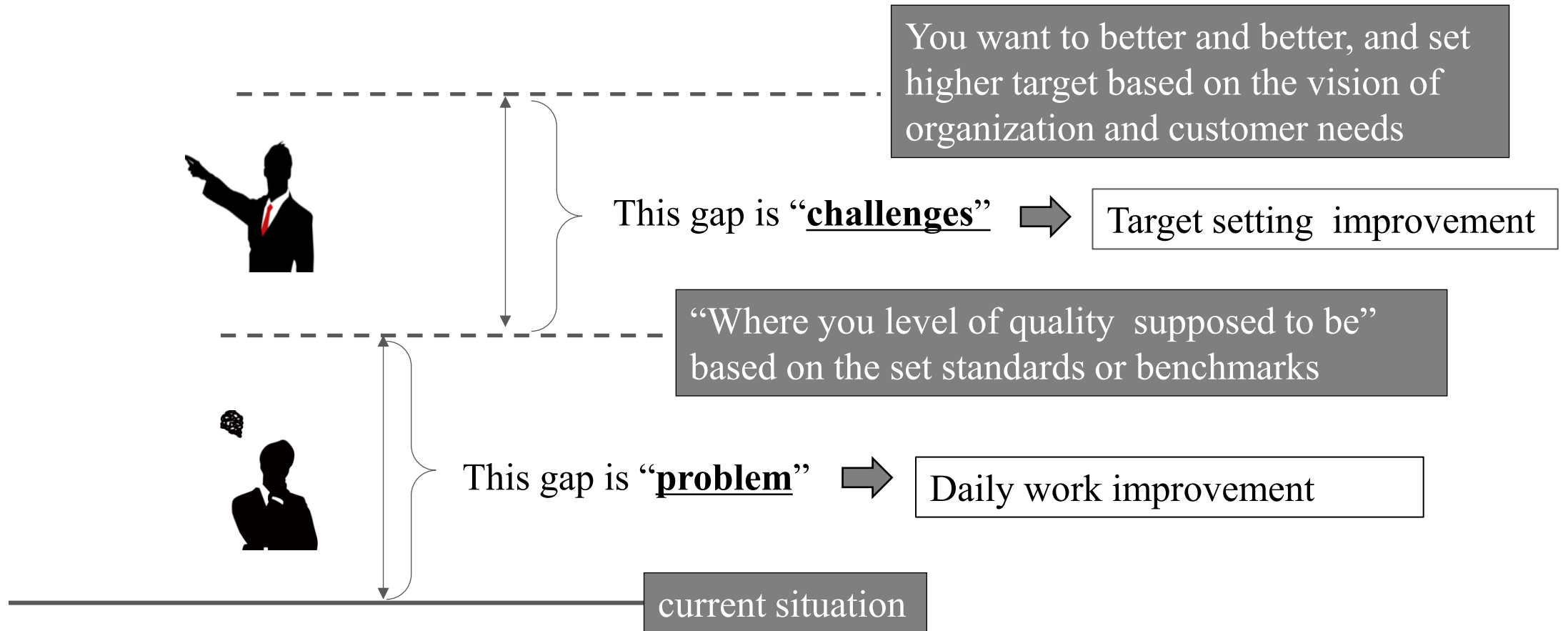
A “small problem” is composed of only a few contributing factors, which means it is not complicated.

**Few contributing factors**



Small house is simple and not complicated to built!

# Difference between “problems” and “challenges”



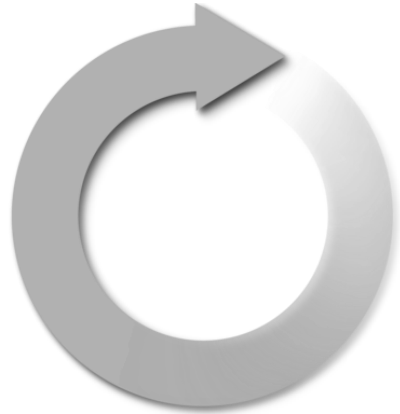
# Where to use the **KAIZEN** approach

Basically, *KAIZEN* involves being aware of problems (“noticing the problem”), taking ownership by recognizing that “I also have a part in this,” and taking action to solve those problems.

Therefore, “KAIZEN” can be applied;

- In an organization,
- At department or section level
- Target of KAIZEN is your work

# Change management of quality from “Closed QC cycle” to “Open quality spiral”



Using established standards or checklists to evaluate performance and assess the level of quality based on the scores obtained.

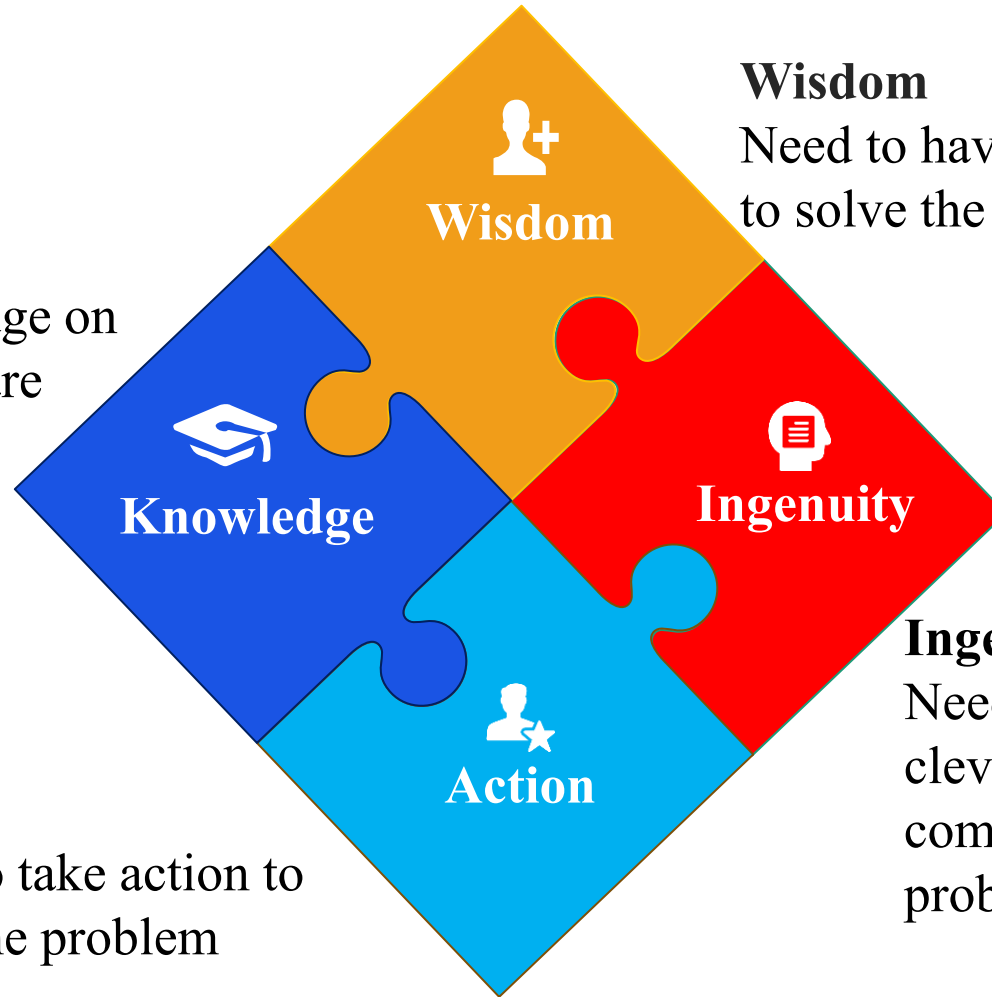


Analyze the results of the evaluation or assessment, and try to improve the situation continuously using your wisdom and insights.

# What you need to practice KAIZEN activities

## Knowledge

Need to have knowledge on the problem that you are going to tackle with



## Wisdom

Need to have wisdom/idea to solve the problem

## Knowledge

## Ingenuity

## Ingenuity

Need to have skill or cleverness in devising or combining to solve the problem

## Action

Need to take action to solve the problem

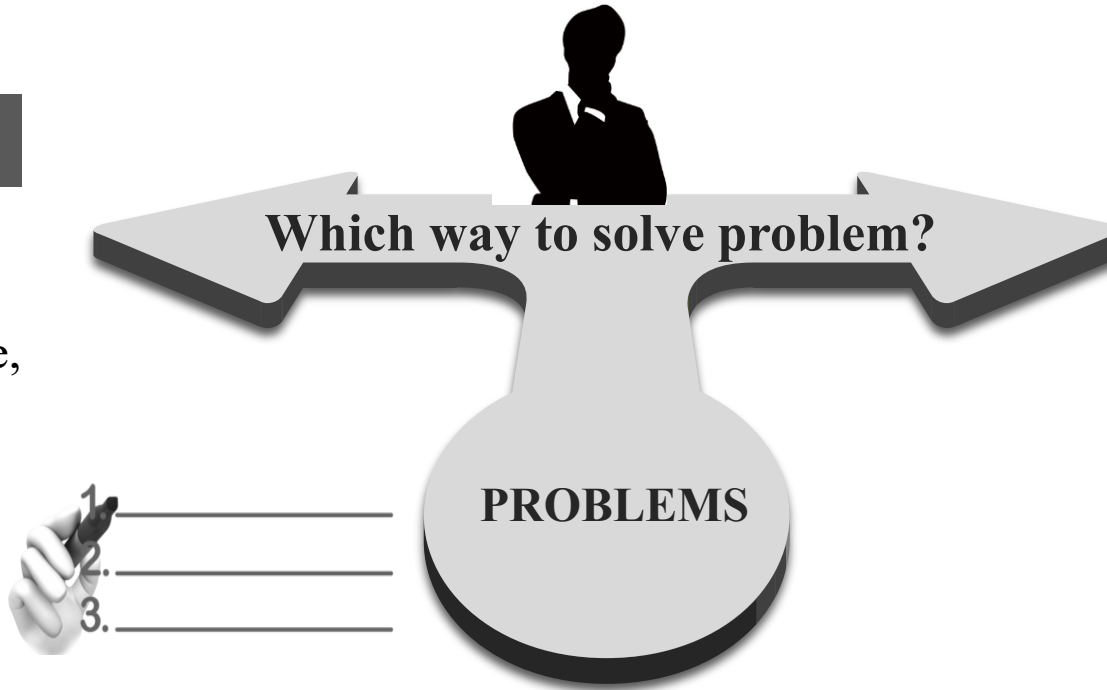
## Action

# Two ways of KAIZEN

## Quick KAIZEN

- It is for non-complicated issue/problem
- Solution should be simple, quick and easy to implement with small amount of inputs

Listing the **Problems** identified and categorize in to two, 1) Quick KAIZEN, and 2) KAIZEN with QC story



## KAIZEN process with QC story

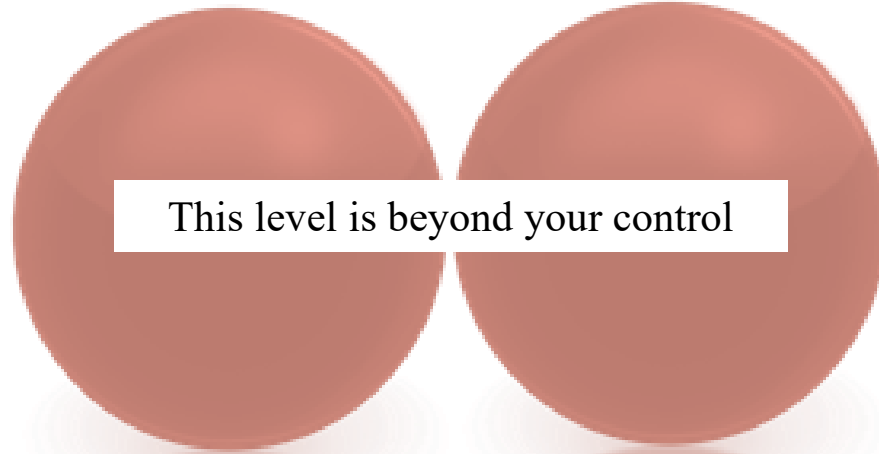
- It is for complicated issue/problem
- Root causes must be well analyzed and countermeasures need to well thought, and implemented to solve the issue/problem
- Prevent recurrence of the issue/problem



Brain storming and discuss on “problems” as possible KAIZEN theme in the section/department

# Type of KAIZEN used for solving different level of problem

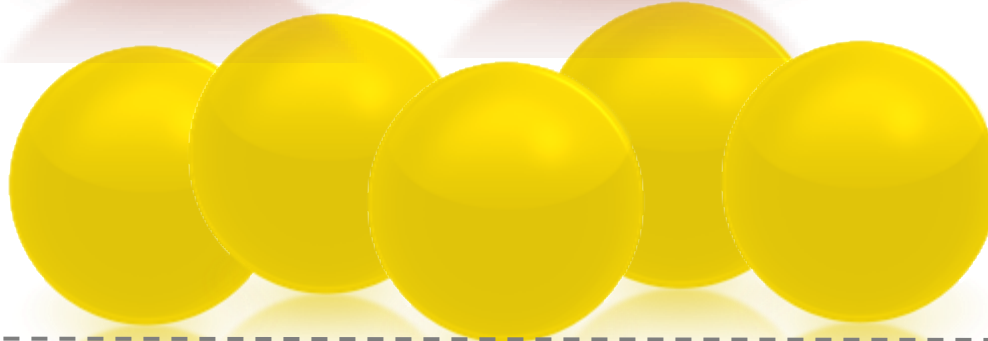
10% of total problems  
Large size problems



This level is beyond your control

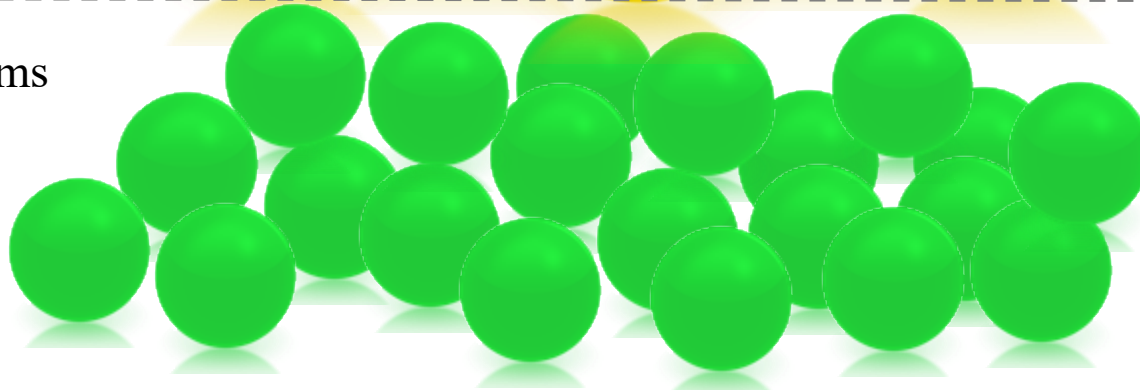
This level of problem is difficult to solve using the KAIZEN approach because system-level changes are required.

30% of of total problems  
Middle size problems



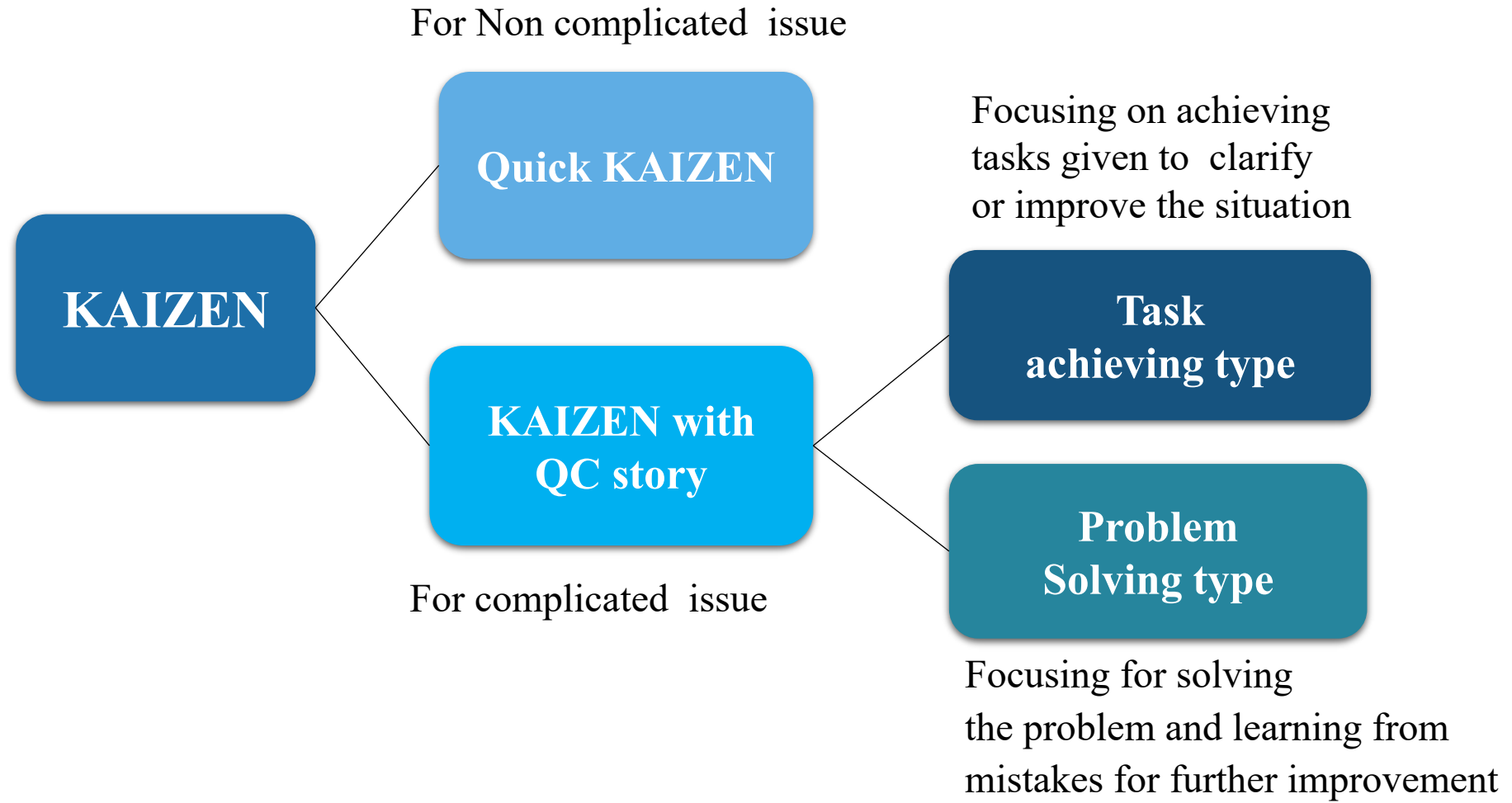
This level of the problems are handled with **KAIZEN with QC story**

60% of of total problems  
Small size problems



This level of the problems are handled with **Quick KAIZEN**

# Types of KAIZEN activities



# “KAIZEN” for Continuous Quality Improvement

*Progress can not be generated  
when we are satisfied with  
existing situation*



Taiichi Ohno : 1912 – 1990  
Former vice president of TOYOTA Motors  
Father of Toyota Production System



# Thank You!

Any question, comments, clarification you need?

<https://noticias.autocosmos.com.mx/2022/04/27/taiichi-ohno-el-ingeniero-de-toyota-que-revoluciono-la-produccion-industrial-en-el-mundo>

Prepared by Fujita Planning



**The 5S-KAIZEN-TQM approach training materials**

# Quick KAIZEN

**Japan International Cooperation Agency  
Fujita Planning Co., Ltd.**



# Objectives

At the end of the session, the participants will be able to;

- Understand what is Quick KAIZEN
- Explain how to implement Quick KAIZEN
- Develop Quick KAIZEN report

# What is correct?

Many people call “Quick KAIZEN” in different way



# There are 2 types of KAIZEN approach

## KAIZEN with QC story

The approach used for solving complicated problems (many factors are involved to cause the problem).



## Quick KAIZEN

The approach used for solving non-complicated problems (one or two factors are involved to cause the problem).

# What is Quick KAIZEN?

- Quick Kaizen recognizes that the person performing a job is the best expert on that job.
- It encourages everyone to make small improvements that are within their power to implement. Over time, these thousands of small improvements have major effects (“every little bit counts”).
- Small-scale improvements are easier and faster to implement. The risks are low because their impact is usually limited. However, the accumulated effect is often greater than that of a single large improvement

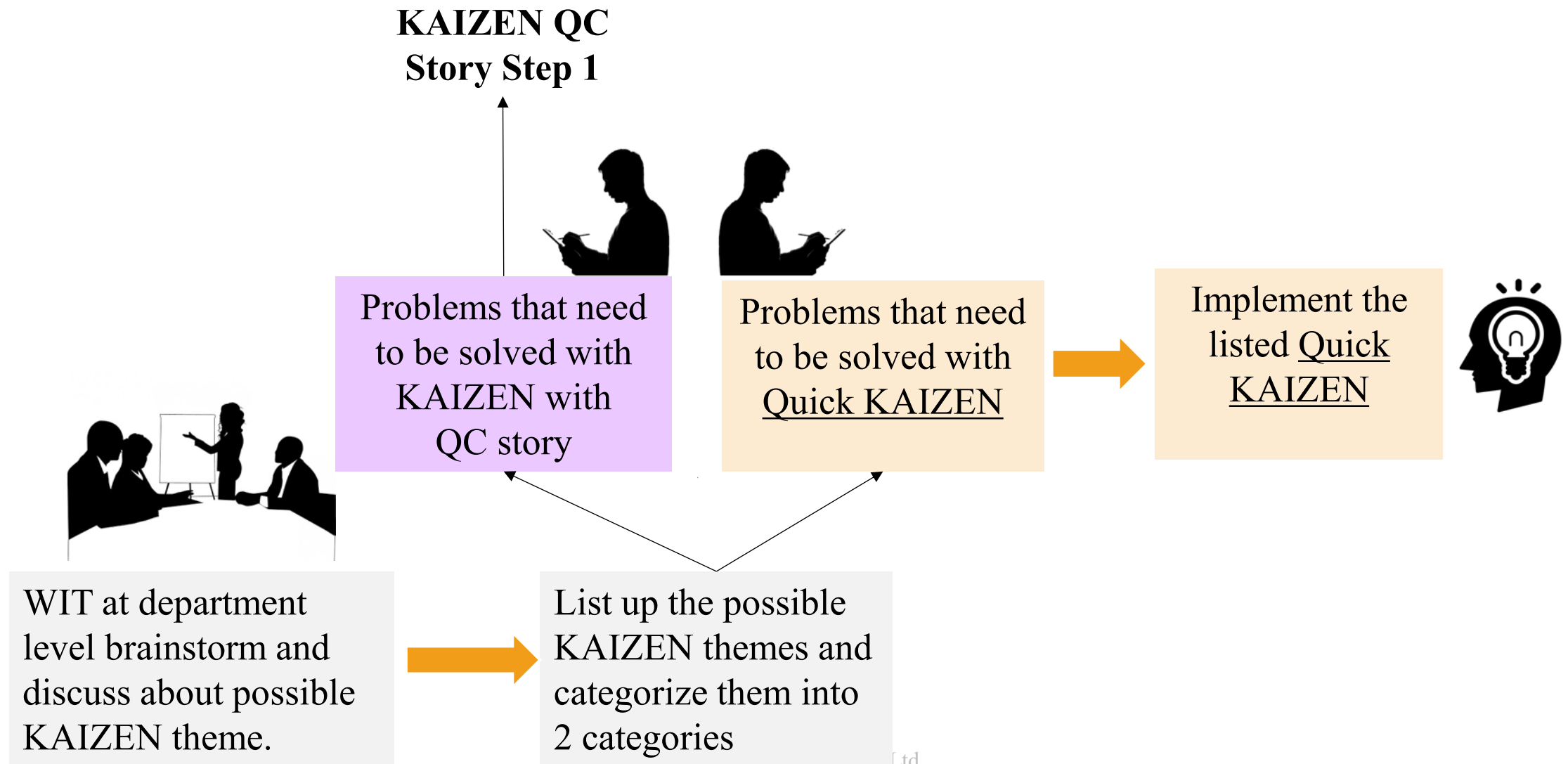
# Characteristics of Quick KAIZEN

- Quick Kaizen focuses on a specific problem in an area or activity and allows us to monitor potential solution methods.
- This helps us track tested solutions and logically determine the best option(s).
- It is suitable for non-complicated issues or problems. Solutions should be simple, quick, and easy to implement, requiring only a small number of resources.
- It promotes a continuous flow of small improvement ideas.

# When to use Quick KAIZEN?

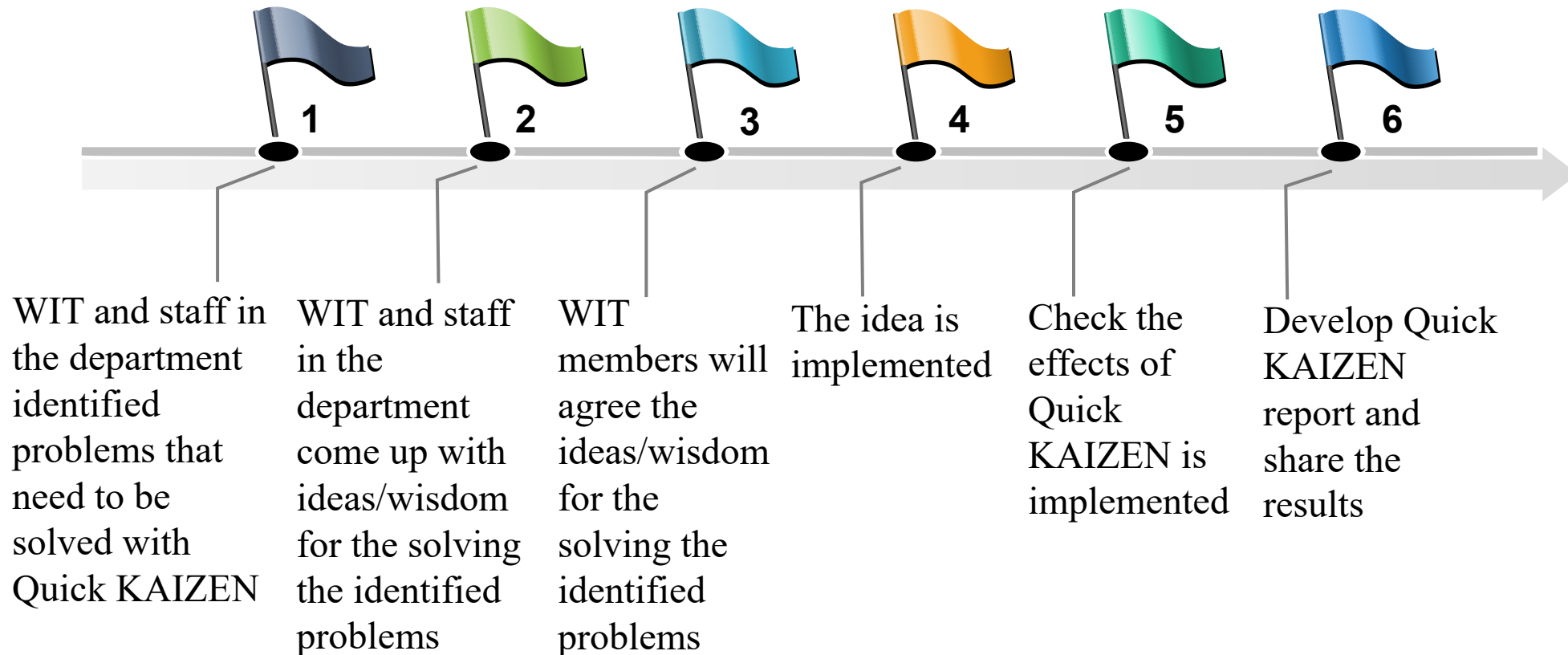
<b>When an urgent problem needs a quick fix</b>	Urgent problems may present themselves as an increase in defective products, a sharp rise in customer complaints, or a failed inspection.
<b>When you want to hit targeted goals</b>	A Kaizen event can provide a strong push toward achieving those goals by documenting your current processes and comparing them with the improved process.
<b>When you have ineffective daily improvements</b>	Getting your team engaged in daily Kaizen activities and adopting a “Kaizen culture” mindset involves encouraging them to make small, continuous improvements in their daily routines.
<b>When you're working with other teams</b>	A Kaizen event provides a structured environment for two departments to come together and determine how to work collaboratively toward a common goal.
<b>When you haven't done one in a while</b>	Kaizen is all about continuous improvement, so it is important to conduct Kaizen activities regularly to keep problem-solving and collaboration skills sharp while continuously refining processes.

# How to select Quick KAIZEN Theme



# Process of implementing Quick KAIZEN

Here is the sequence of events for a Quick & Easy Kaizen



# Example of quick KAIZEN



# Example of Quick KAIZEN from Tanzania

One of government hospital in Tanzania faced a problem of healthcare waste management. Frequent shortage of bin liners and costs for procurement of bin-liner was high.

Conducted KAIZEN QC story and succeeded to introduce self-production of bin-liners in the facility and reduce the procurement costs.

Method of self-production of bin-liners was introduced to other government hospitals.

During the COVID-19 pandemic period, shortage of PPE was the one of the big problem. Those hospitals had system of self-production of bin-liners use their wisdom to make PPE with the same materials used for making bin-liners within the facility



**Quick KAIZEN with wisdom**

# Quick KAIZEN and 5S activities

We are often asked, “What is the difference between 5S and Quick Kaizen?”

- There are **no clear boundaries** between Quick Kaizen and 5S activities.
- In fact, **Quick Kaizen is often practiced through 5S activities without people even noticing.**

# Record keeping of Quick KAIZEN

- Quick Kaizen case reports are prepared quickly by implementers after the activity is completed and are then reported and shared with the QIT through the WIT.
- Report Quick Kaizen cases using a format that enables concise documentation of the interventions and their effects.

# Quick KAIZEN Report

Department/Section/Unit: \_\_\_\_\_  
Date of implementation: \_\_\_\_\_  
Who implemented this quick KAIZEN: \_\_\_\_\_

**Before Quick KAIZEN**

**After Quick KAIZEN**

*Pictures before KAIZEN*

*Pictures after KAIZEN*

**Description of the situation before:**

**What did you do?**

**Description of the situation after:**

**Benefits from this Quick KAIZEN:**

- |  |  |
|--|--|
| <input type="checkbox"/> Improve movement/transportation | <input type="checkbox"/> Improve productivity                            |
| <input type="checkbox"/> Reduce staffs' work burden      | <input type="checkbox"/> Improve patients' safety                        |
| <input type="checkbox"/> Improve workers' safety         | <input type="checkbox"/> Others: Improve IPC, Improve staff satisfaction |

# Quick KAIZEN Report

Department/Section/Unit: Internal medicine department

Date of implementation: 23/03/2024

Who implemented this quick KAIZEN: Work Improvement Team

Before Quick KAIZEN



After Quick KAIZEN



### Description of the situation before:

- The patients' medicines are mixed up into the drawer.
- The staff **wasted her/his time to find the medicines.**
- Also, there were **always potential to wrong medication** which can harm our patients by our healthcare service provision.

### What did you do?

- Using empty boxes to separate the medicines by bed in the cubic.
- Put the bed numbers on each boxes and organized medicines per patients.

### Description of the situation after:

- We improved **efficiency of our work** with recycled boxes, and labels on a bed number as well as **patient safety to prevent any problem in medication error.**
- Through this 5S, our staff recognized an importance of patient safety and recycling items for WEI without spending money to buy a container.

### Benefits from this Quick KAIZEN:

- |  |  |
|--|--|
| <input type="checkbox"/> Improve movement/transportation | <input checked="" type="checkbox"/> Improve productivity                 |
| <input type="checkbox"/> Reduce staffs' work burden      | <input type="checkbox"/> Improve patients' safety                        |
| <input type="checkbox"/> Improve workers' safety         | <input type="checkbox"/> Others: Improve IPC, Improve staff satisfaction |

# Thank You!

Any question, comments, clarification you need?



The 5S-KAIZEN-TQM approach training materials

# What is Total Quality Management in health sector?

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# Definition of TQM

- The long-term success of an organization is achieved by providing products and services that meet the needs of customers and society, while also ensuring the satisfaction of its workers.
- It involves activities that promote effective and efficient organizational management—activities that can adapt to changes in the business environment by maintaining, improving, and innovating processes and systems, with the participation of all departments and all levels of staff.

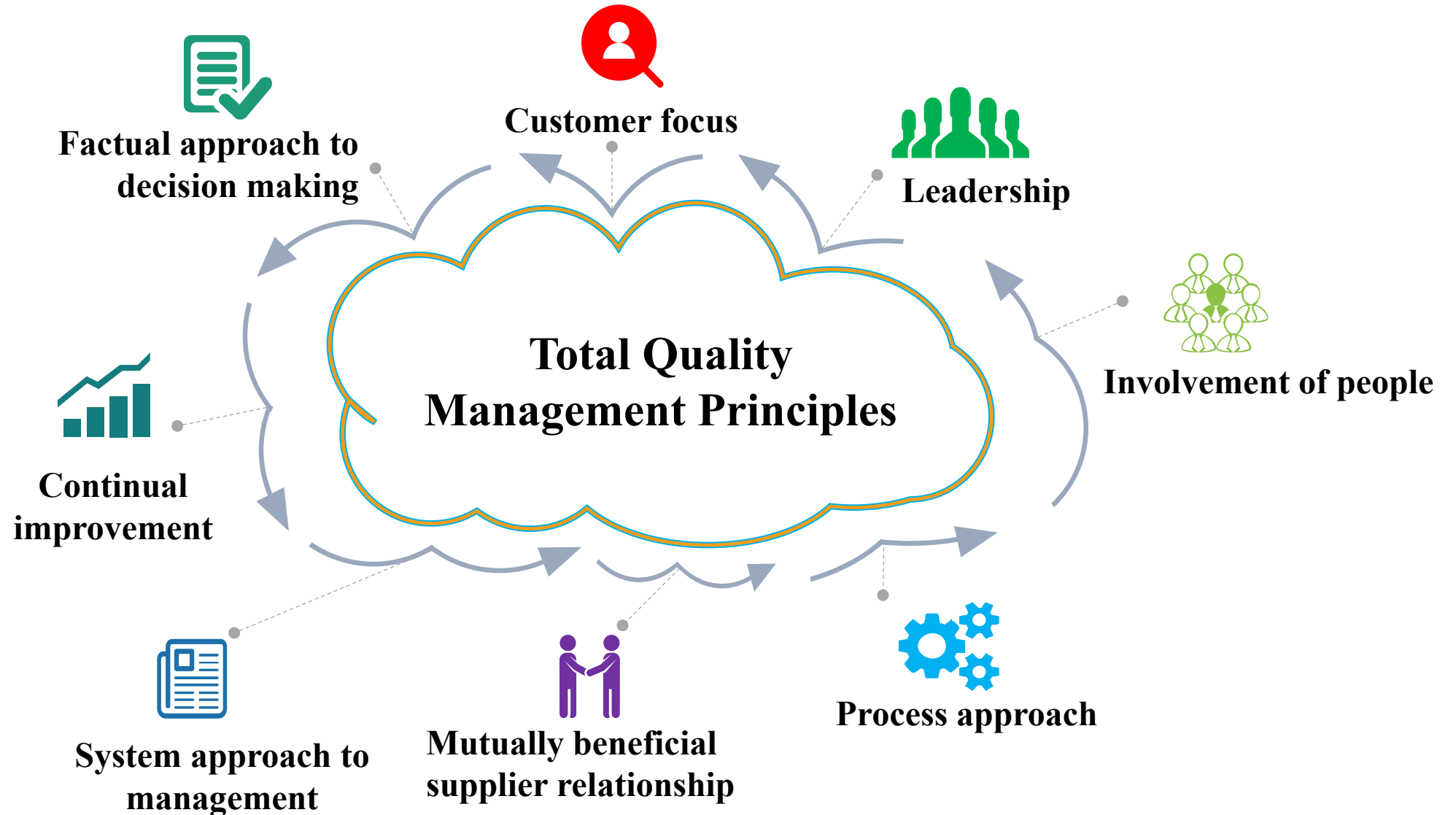


# Description of TQM









- TQM enables comprehensive, organization-wide quality improvement by targeting the key components of an organization—from “people (individuals)” to “jobs (work processes)” and “mechanisms (organizational structures and systems).”
- TQM is characterized by a scientific approach, a process-oriented perspective, and an organizational approach



# Total Quality Management Principles



# TQM Principles

	<b>Customer focused organization</b>	Organizations depend on their customers and therefore should understand current and future customer needs, meet customer requirements, and strive to exceed customer expectations.
	<b>Leadership</b>	Leaders establish unity of purpose and direction. They should create and maintain an internal environment in which people can be fully involved in achieving the organization's objectives.
	<b>Involvement of people</b>	People at all levels are the essence of an organization, and their full involvement enables their abilities to be utilized for the benefit of the organization.
	<b>Process approach</b>	A desired result is achieved more efficiently when activities and related resources are managed as a process.
	<b>System approach to management</b>	Identifying, understanding and managing a system of interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.
	<b>Continual improvement</b>	Continual improvement of the organization's overall performance should be a permanent objective of the organization.
	<b>Factual approach to decision making</b>	Effective decisions are based on the analysis of data and information.
	<b>Mutually beneficial supplier relationships</b>	An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

# How to implement TQM activities

- There is no single formula for implementing TQM that applies to every business or industry. However, the following points may help you understand and implement TQM more effectively:



The development of organizational policy and strategy, and their effective deployment throughout the organization



Identify the organization's existing culture, core values, and systems, and use this information to design a comprehensive system that will function as the master plan.



Establish a mechanism for identifying clients' needs and expectations and determining the appropriate actions to meet those expectations.



Creation of a team composed of management and employees to implement TQM activities and integrate these efforts into the daily work management process.



Continuously collect feedback from employees and customers to assess progress and identify areas for improvement

# Management roles for TQM

## Training

Provided to employees to ensure they can maximize their abilities.

## Communication

Ensure that all channels of communication remain open and accessible.

## Trust

Maintained across all levels of the organization, both internally and externally.

## Leadership

It must be effective, positive, and constructive

## Teamwork

Bringing everyone's talents together in one pool can generate many different benefits.

## Basic ethics

Professional code and procedures are part of the business and implemented

## Recognition

Employees and customers are appreciated for their unique contributions

## Integrity

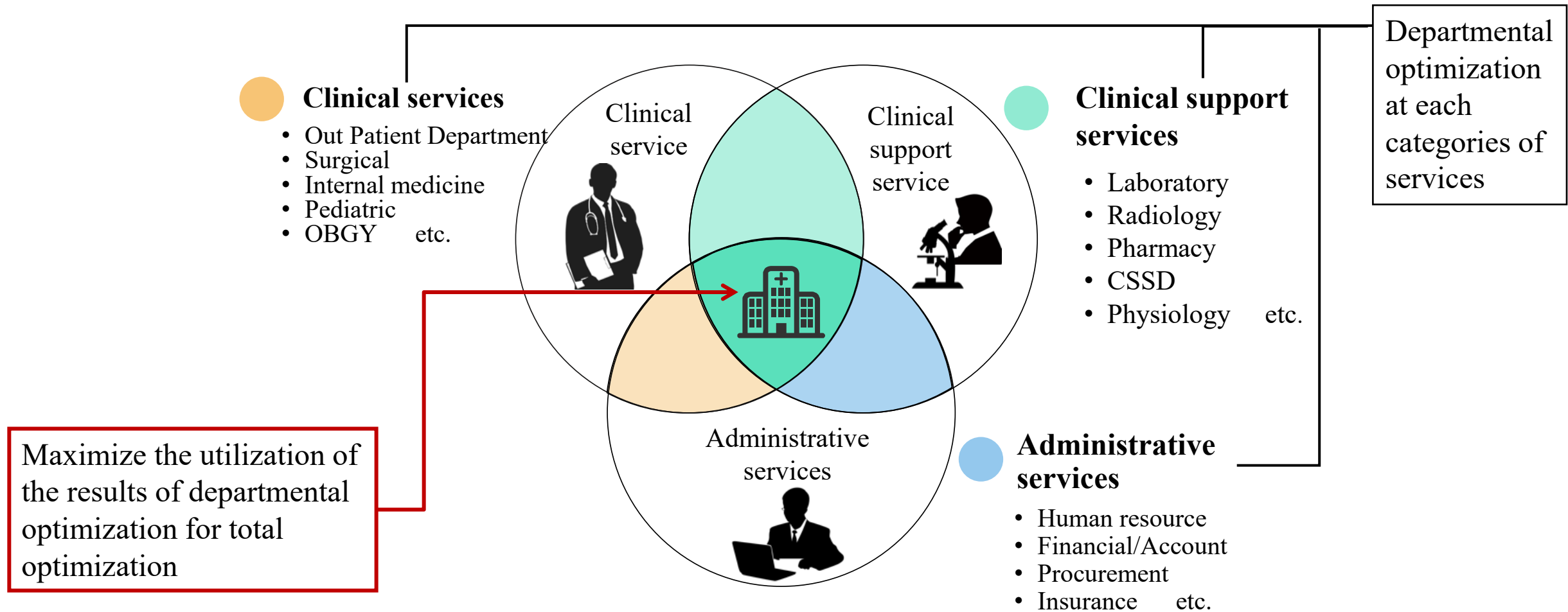
All business endeavors are honest and upheld by solid morals



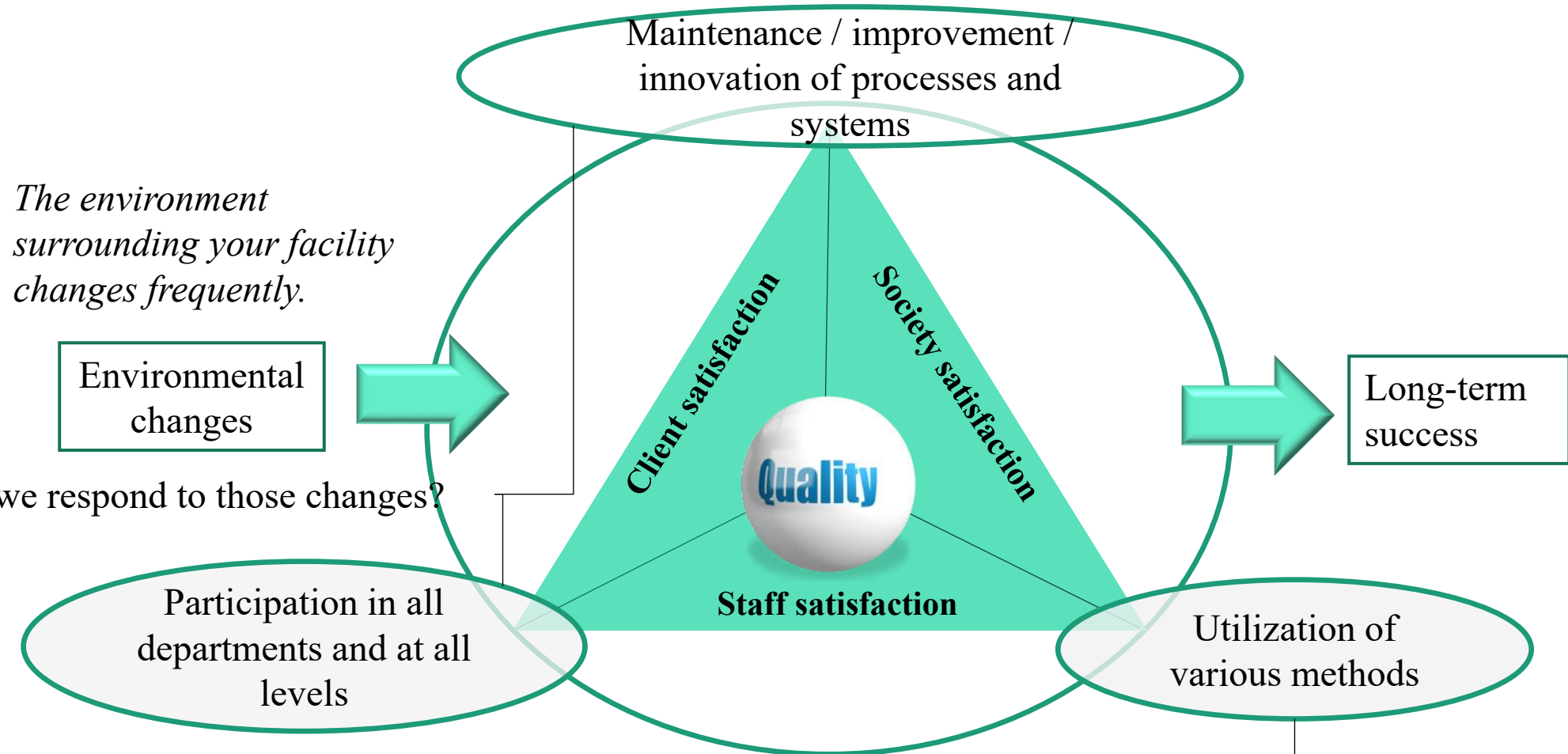
# Departmental Optimization and Total Optimization for TQM

- Compared with other sectors, the hospital system is composed of multiple sections and departments, each requiring a high level of professionalism. Therefore, managing a hospital system is inherently difficult. For this reason, **departmental optimization** is emphasized to increase productivity, improve cost-effectiveness, and meet client needs and expectations at the department level.
- On the other hand, **total optimization** is also essential from the perspective of overall hospital operations. To provide appropriate healthcare services, each department must function properly, and the workflow between departments must be smooth.
- Therefore, it is important to establish a mechanism that monitors the hospital's operational status while maintaining a balance between departmental optimization and total optimization

# Departmental optimization under different categories of services in hospital system

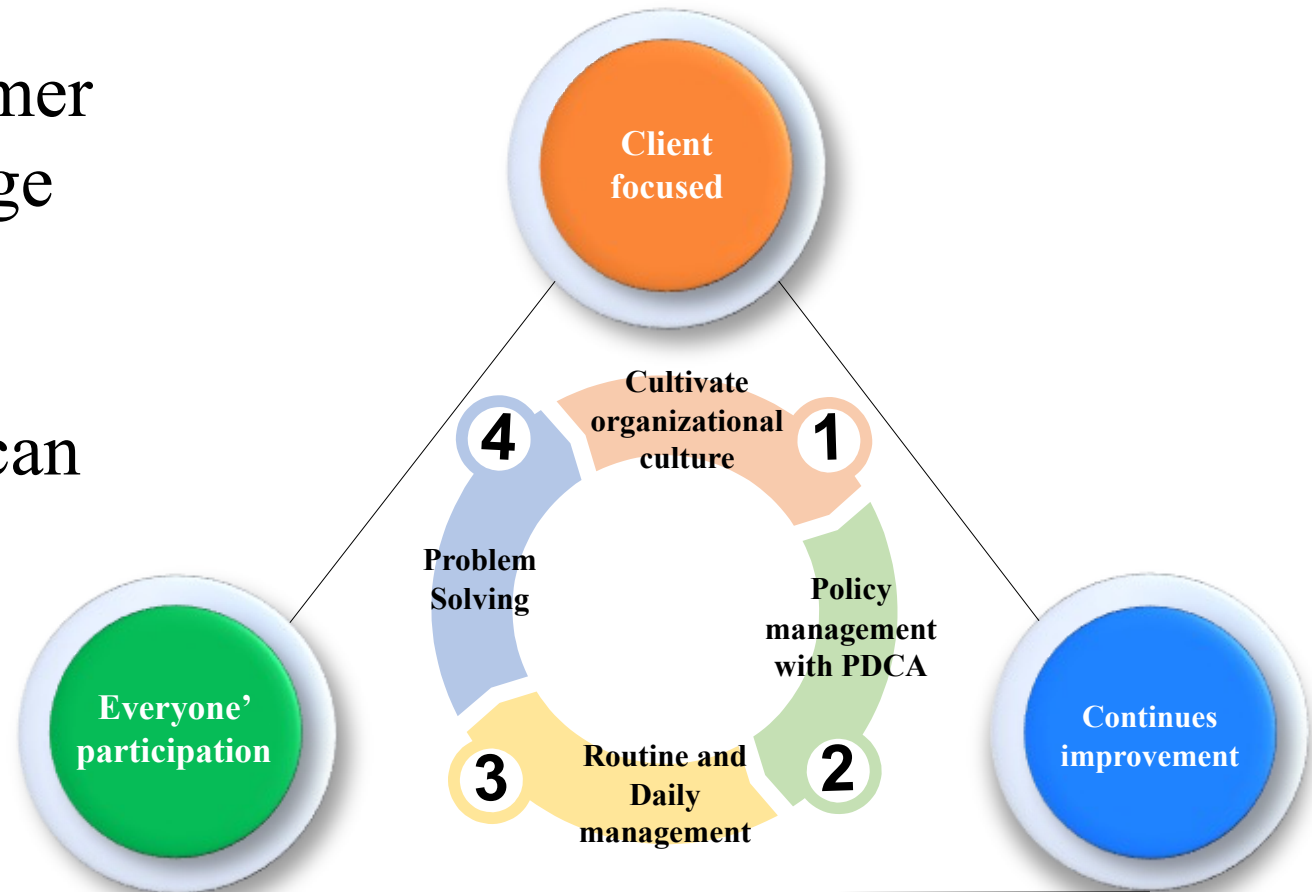


# Basic concept of TQM



# 3 Basic concept of TQM and 4 TQM activities

- Everyone in the organization thinks and acts according to their roles, implements the principle of customer focus, acquires the basic knowledge and skills of quality control, and strengthens and improves the organizational structure so that it can flexibly respond to fluctuations through practical application



**TQM activity**

Top down activities

- Hospital policy and strategy development
- **Policy and strategy deployment**
- Resource management

**Top management**

**Department head /  
Section in-charge**

**Frontline health  
workers**

**Delegation and trust**

**Supervision and trust**

**Contribute to realize the  
hospital's vision and mission**

**Everyone's participation &  
Emphasize on-site activities**

**Quality and safety culture**

**Horizontal  
communication**

**Team work and  
good info sharing**

# Thank You!

Any question, comments, clarification you need?



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# Hazard Prediction Training (HPT)

Japan International Cooperation Agency  
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# “To Err Is Human”

*It is natural for human beings to make mistakes !*

**To Err Is Human** breaks the silence that has surrounded medical errors and their consequence but not by pointing fingers at caring health care professionals who make honest mistakes.

It asserts that the problem is not bad people in health care it is that good people are working in bad systems that need to be made safer.

# Patient safety is a serious global issue



- In developed countries, as many as one in 10 patients is harmed while they receive hospital care
- The harm can be caused by various errors or adverse events



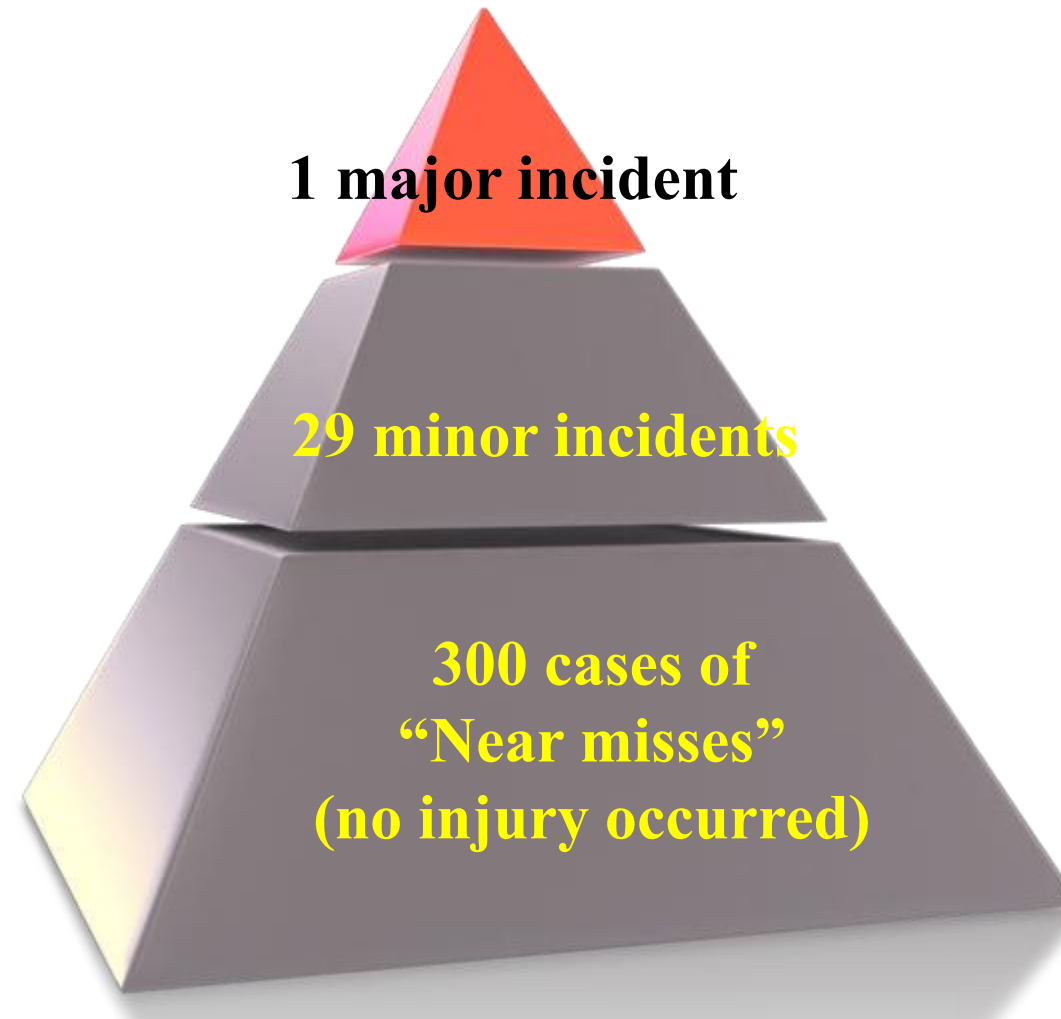
- In developing countries, the probability of patients being harmed in hospitals is higher than in developed countries
- The risk of healthcare-associated infection in some developing countries is as much as 20 times higher than that in developed countries



Prevalence of Hospital Acquired Infection in developing countries is 15.5 per 100 patients

B Allegranzi et al., Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis, *Lancet* 2011; 377: 228-41, DOI: 10.1016/S0140-6736(10)61458-4

# Heinrich's principle



Behind one major incident, there are 29 minor incident occurs.  
Behind 29 minor incident, there are 300 near miss cases occurs

# Medical errors

- Traditional ways of safety improvement are:
  - Learning from mistakes and feedback from incident
  - Develop and follow Standard Operating Procedures
  - Strict warning and punishment to health workers



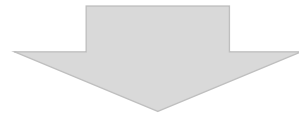
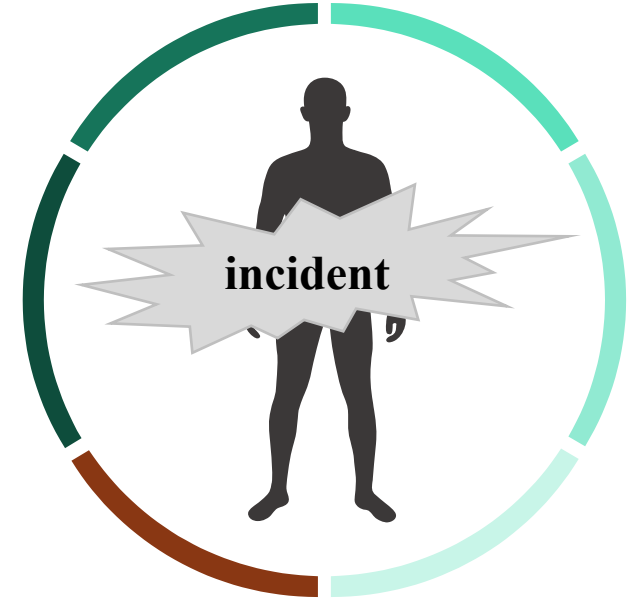
Can not avoid medical errors  
even taking the above measures

**Why and what is missing?**



# Why medical errors happen?

- An error can either be a **“cause”** or an **“effect”**
- However, there are **“factors”** behind the error;
  - Physical condition, behaviour, environment, equipment, drug, sound/noise, treatment, instruction, location, system, communications...
- **Factors are various and interacted each other!**



We must anticipate potential hazards to avoid medical errors/accidents!!

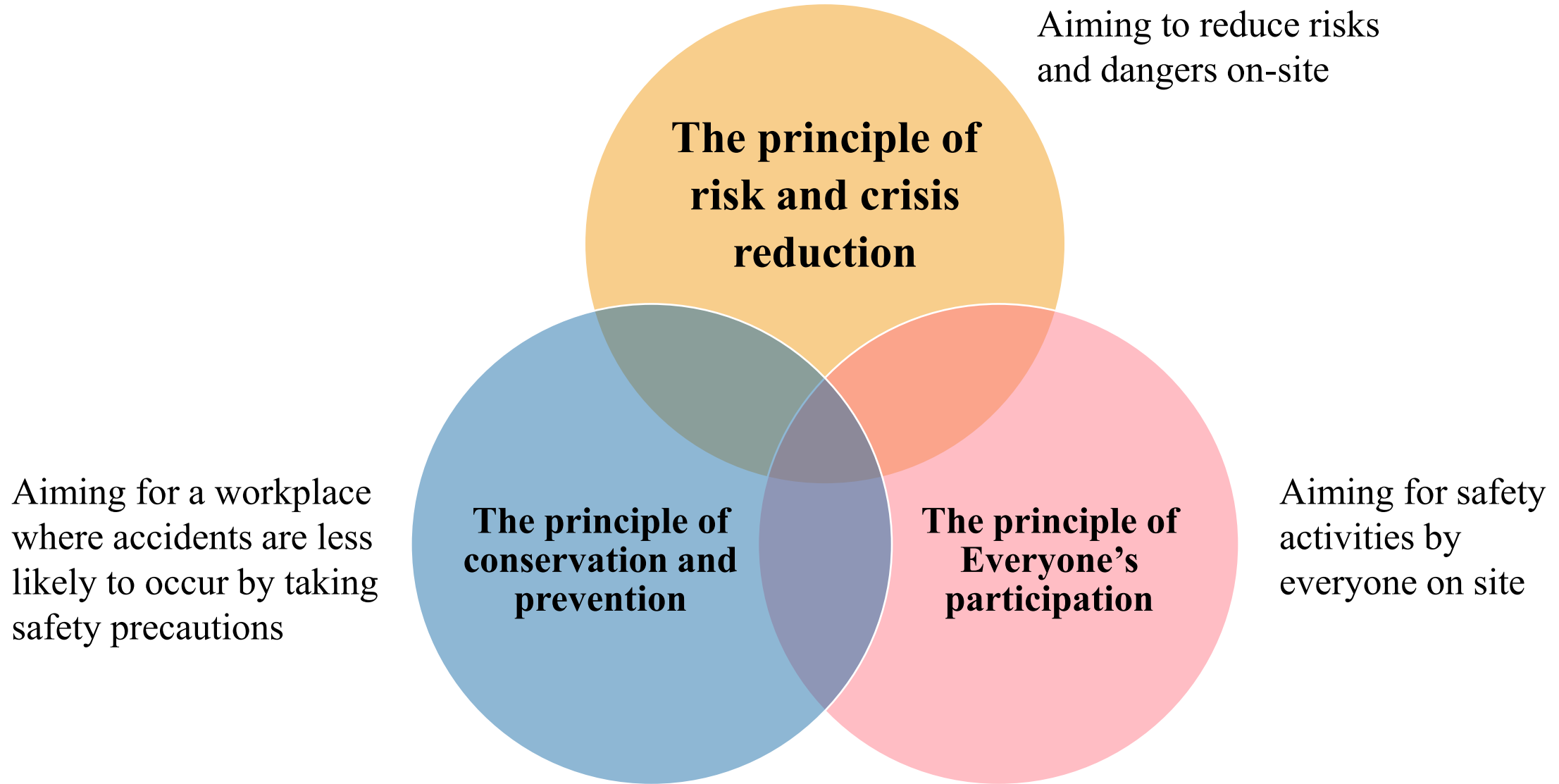


**Hazard Prediction Training** will help us to reduce medical errors!

# What is HPT?

- HPT is a method that can increase the awareness on safety in the workplace by discussion and sharing information on dangers and hazards
- Originally developed and introduced in industrial sector to prevent work-related accidents in Japan in 1970s.
- It is now widely used in different sectors;
  - e.g. manufacturing, construction sites, driving schools, primary schools and so on... **of course health care services**

# Three principles of HPT



# Purpose of HPT

- Acquire the ability to detect the possibility of errors and accidents that have not yet occurred and take measures to prevent them in advance.
- Training to increase sensibility to danger and hazard to patients and staff in the health facility.



- Preventive measures can be taken
- Possible to take quick response when it actually happens

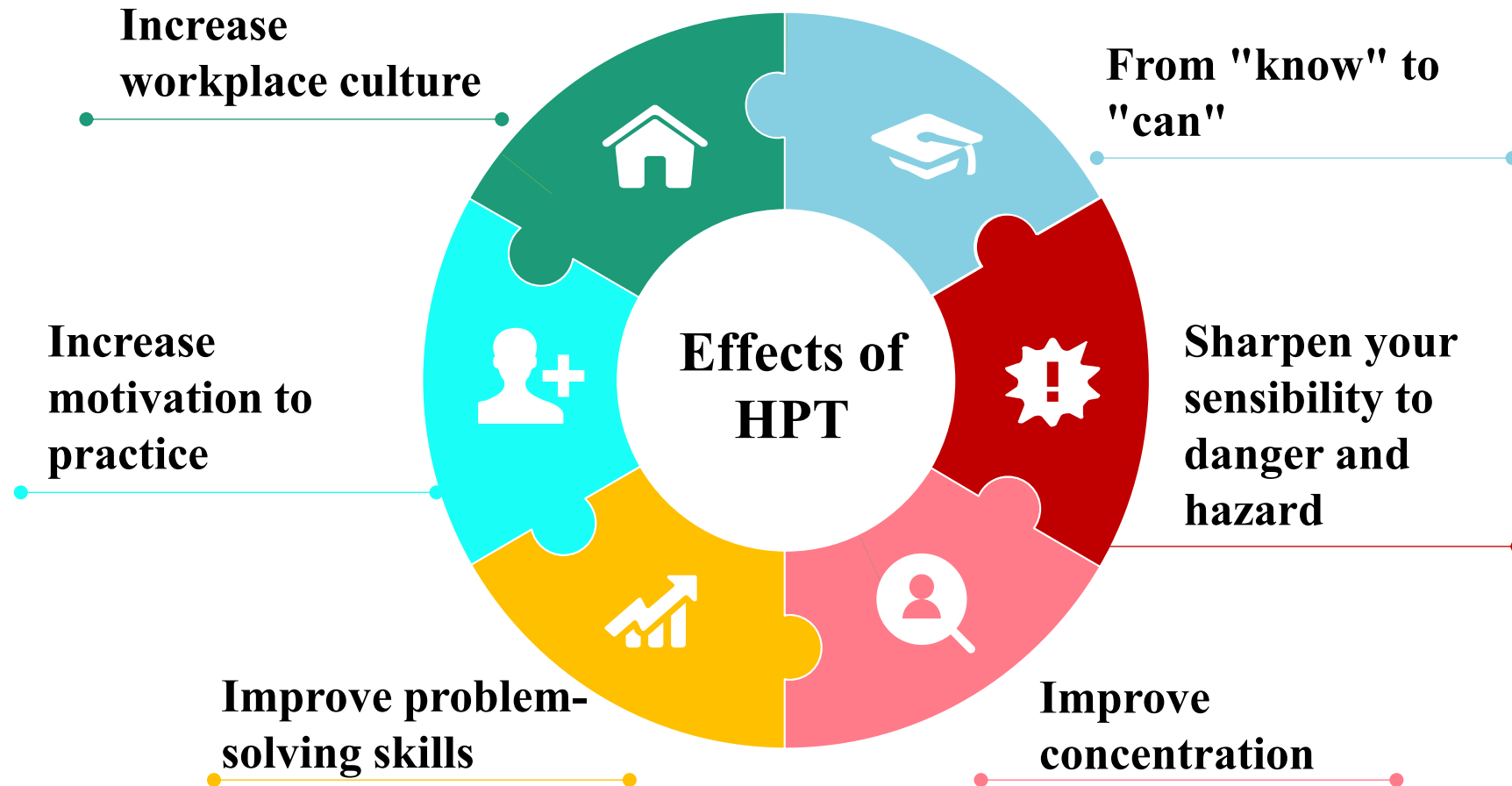


# What HPT can do in healthcare?

- Enhance our sensibility towards potential hazards before occurring towards external clients and also internal clients
  - To improve safety in health care services
  - To improve occupational health and safety
- Improve problem-solving skills of all cadres of hospital staff including students
- Get into the habit of “taking action for prevention of hazards immediately”
- Promote and strengthen teamwork



# Effects of HPT



# Different types of HPT

HPT can be categorized into the following four types;

Categories	Effects	Method
HPT for checking physical condition of staff	Increased 1) attention and 2) team awareness	<ul style="list-style-type: none"><li>• Asking the physical condition of co-workers at the beginning of shift.</li><li>• Prevent medical accidents caused by poor physical condition</li><li>• Foster compassion for team members "Can you work safely in your physical condition today?"</li></ul>
HPT for communication improvement	Increases 1) attention, 2) sensitivity, 3) judgment and 4) team awareness	Develop a memo using 5W1H about received instructions based on the instructions from senior staff, and check whether the memo is correct or not.
HPT for problem solving	Increases 1) attention, 2) sensitivity, 3) judgment and 4) team awareness	4 round method
HPT for learning from near miss cases/incident report	Increases 1) attention, 2) sensitivity, 3) judgment and 4) team awareness	4 round method

**“When you are driving and see this situation, what do you have to pay attention to?”**



**Let us start learning HPT!**

# How to conduct HPT 4 round method?

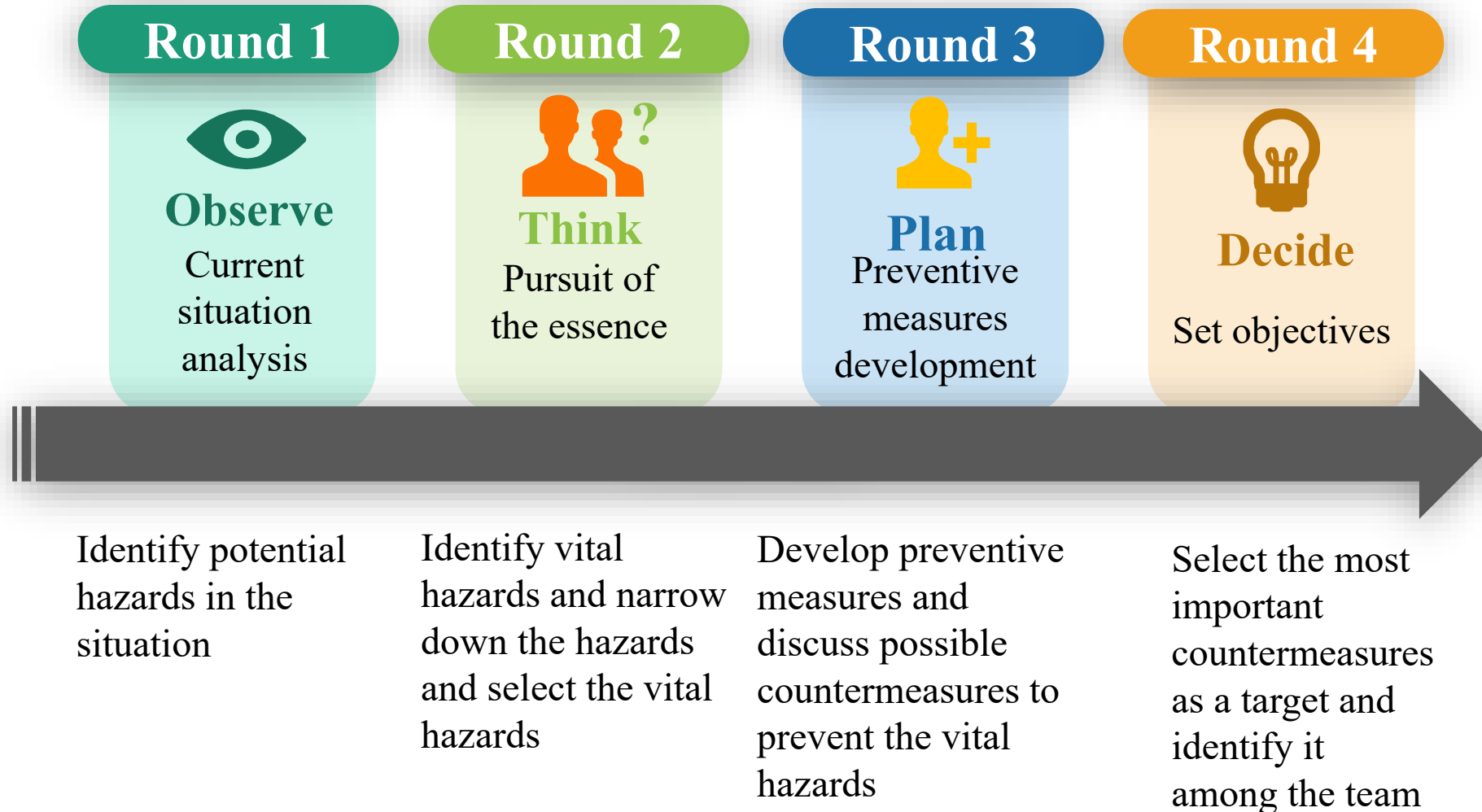


## Source of pictures

<http://www.mh.nagasaki-u.ac.jp/kaihatu/photo/medical/h21/0826/images/04.jpg>

<http://www.sawarabi.or.jp/wp/wp-content/uploads/2015/05/1.jpg>

# HPT 4 round problem-solving method





## How to conduct group work



1

Formulate a group with 5 to 6 people



2

Select “leader”, record keeper and time keeper



3

Share the case from leader



4

Complete 4 round method



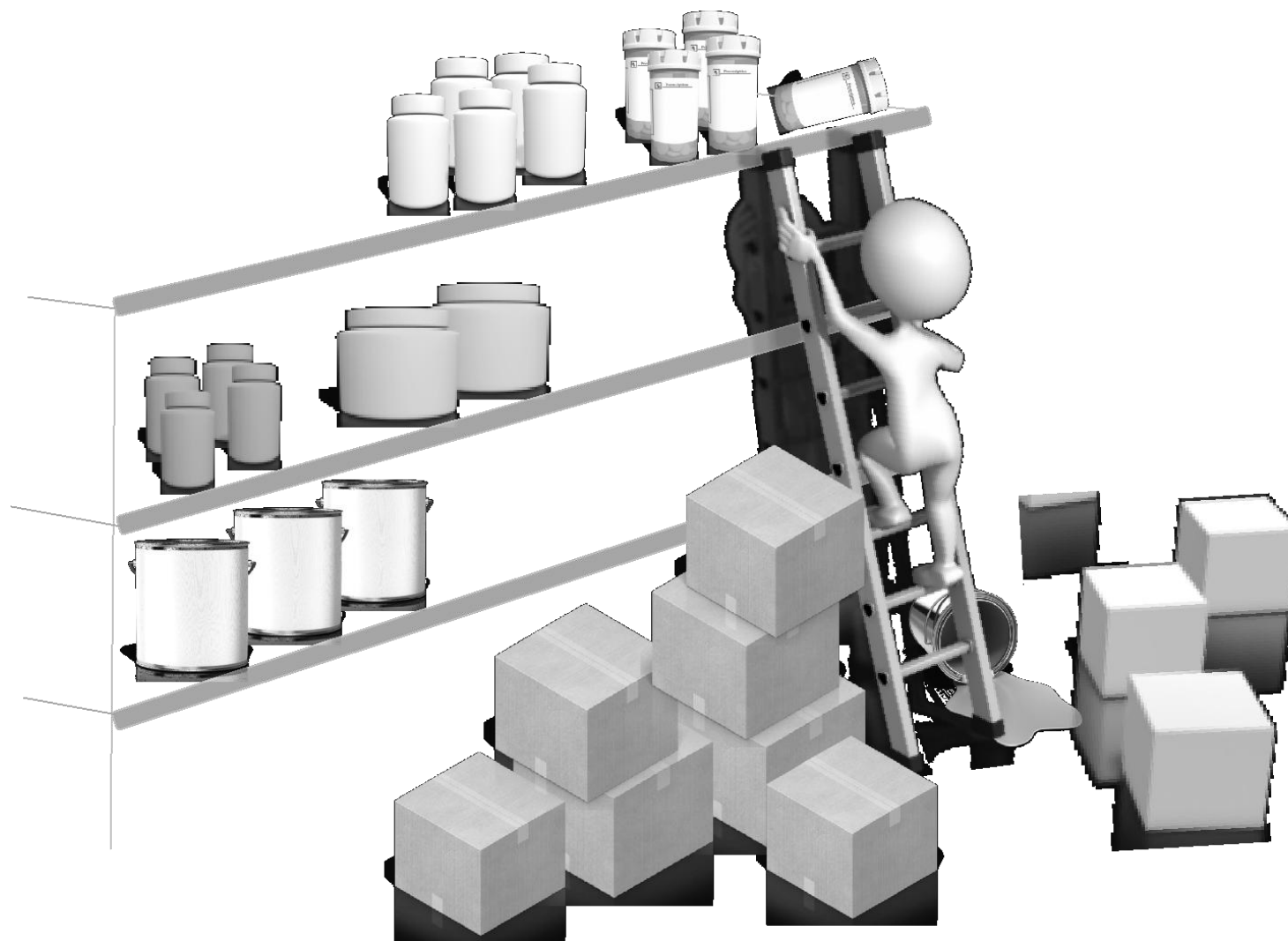
5

Presented, pointing and calling.

You need to prepare

1. Illustration or picture that can use it for case discussion in 4 round method
2. Hazard Prediction Training (HPT) sheet

## Example of situation illustration / pictures



# HPT Sheet

Date:    /    /

Leader: \_\_\_\_\_

Members: \_\_\_\_\_

No.	Risk factors <i>Since ----- (Risk factors),</i>	Accidents/incidents <i>----- (Accidents) happens</i>
1		
2		
3		
4		
5		
6		
7		
Significant hazards	Preventive Measures	

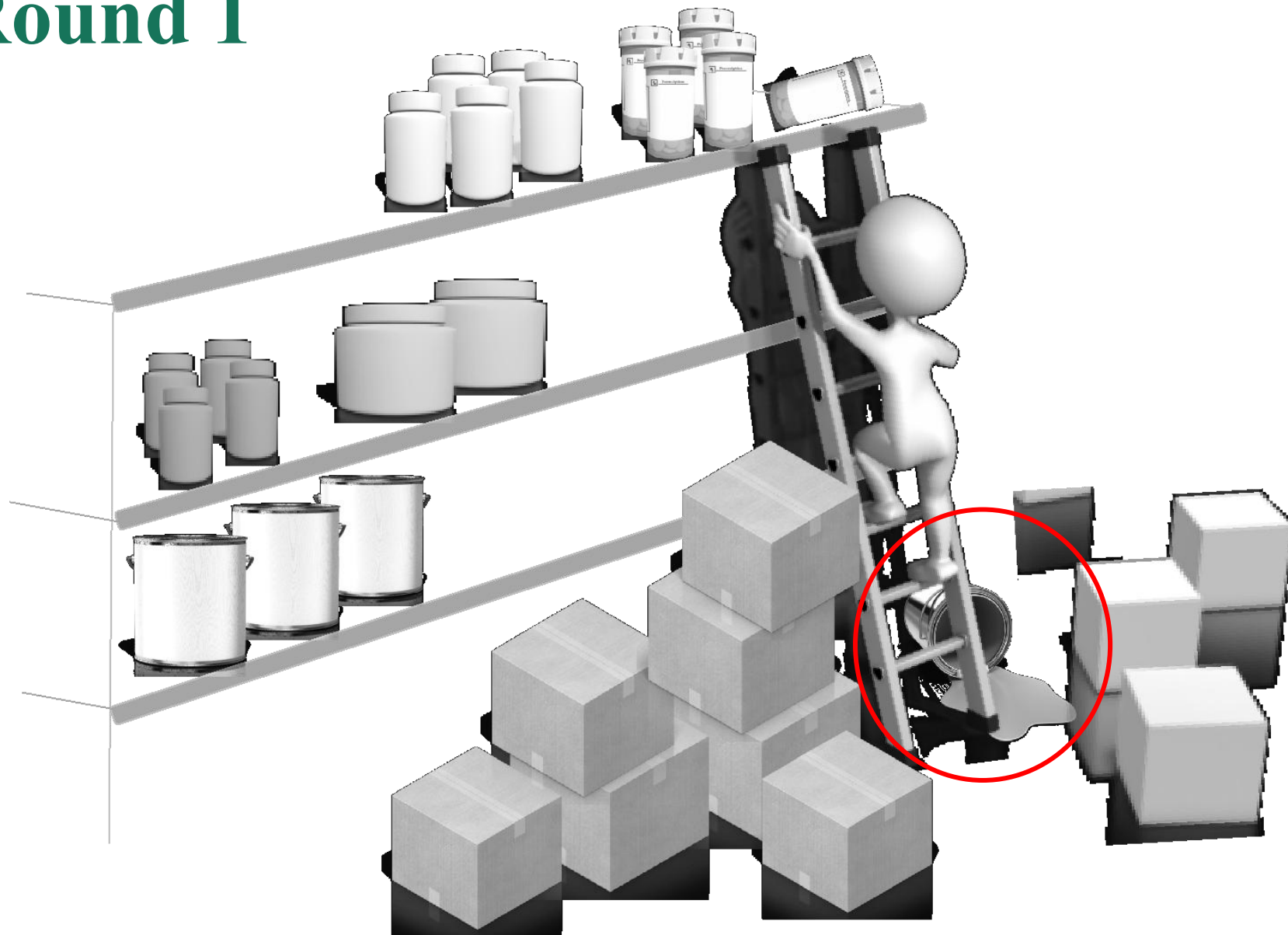


## Round 1:




### Identify potential Hazards in the situation

1. Looking at picture or illustration and explain the situation
2. Ask members about potential hazards in the situation
3. List up “risk factors”, which may cause “accident”, and accidents may be caused by those “risk factors”
4. Describe them as “Cause-and-Effect” relation
5. Try to be specific and concrete so the member can easily imagine the situation

# Round 1



# Round 1: Examples

	Risk factors <i>Since ----- (Risk factors),</i>	Accidents <i>----- (Accidents) happens</i>
 <b>Not good example</b>	<i>Since the ladder is <u>unstable</u>,</i> <div data-bbox="591 496 1284 644" style="border: 1px solid black; padding: 5px; margin-top: 10px; color: red; text-align: center;"> <i>How unstable?? Describe the situation precisely</i> </div>	<i>it <u>may be</u> dangerous.</i> <div data-bbox="1477 496 2163 644" style="border: 1px solid black; padding: 5px; margin-top: 10px; color: red; text-align: center;"> <i>Avoid using hypothetical phrase</i> </div>
 <b>Not good example</b>	<i>Since the ladder is <u>not fixed</u>,</i> <div data-bbox="657 856 1317 953" style="border: 1px solid black; padding: 5px; margin-top: 10px; color: red; text-align: center;"> <i>Avoid using negative sentence</i> </div>	<i><u>a staff loses his balance.</u></i> <div data-bbox="1421 811 2040 908" style="border: 1px solid black; padding: 5px; margin-top: 10px; color: red; text-align: center;"> <i>Describe it as an "Accident"</i> </div>
 <b>Good example</b>	<i>Since the ladder is standing and water is spilled on the floor, it is sliding,</i>	<i>a staff loses his balance and gets injuries by falling off the ladder.</i>

# Round 1: example

## HPT Sheet

Date: 13/6/2020

Leader: *John (MD)*

Members: *Mpinde, Kombo, Jovani, Mapunda*

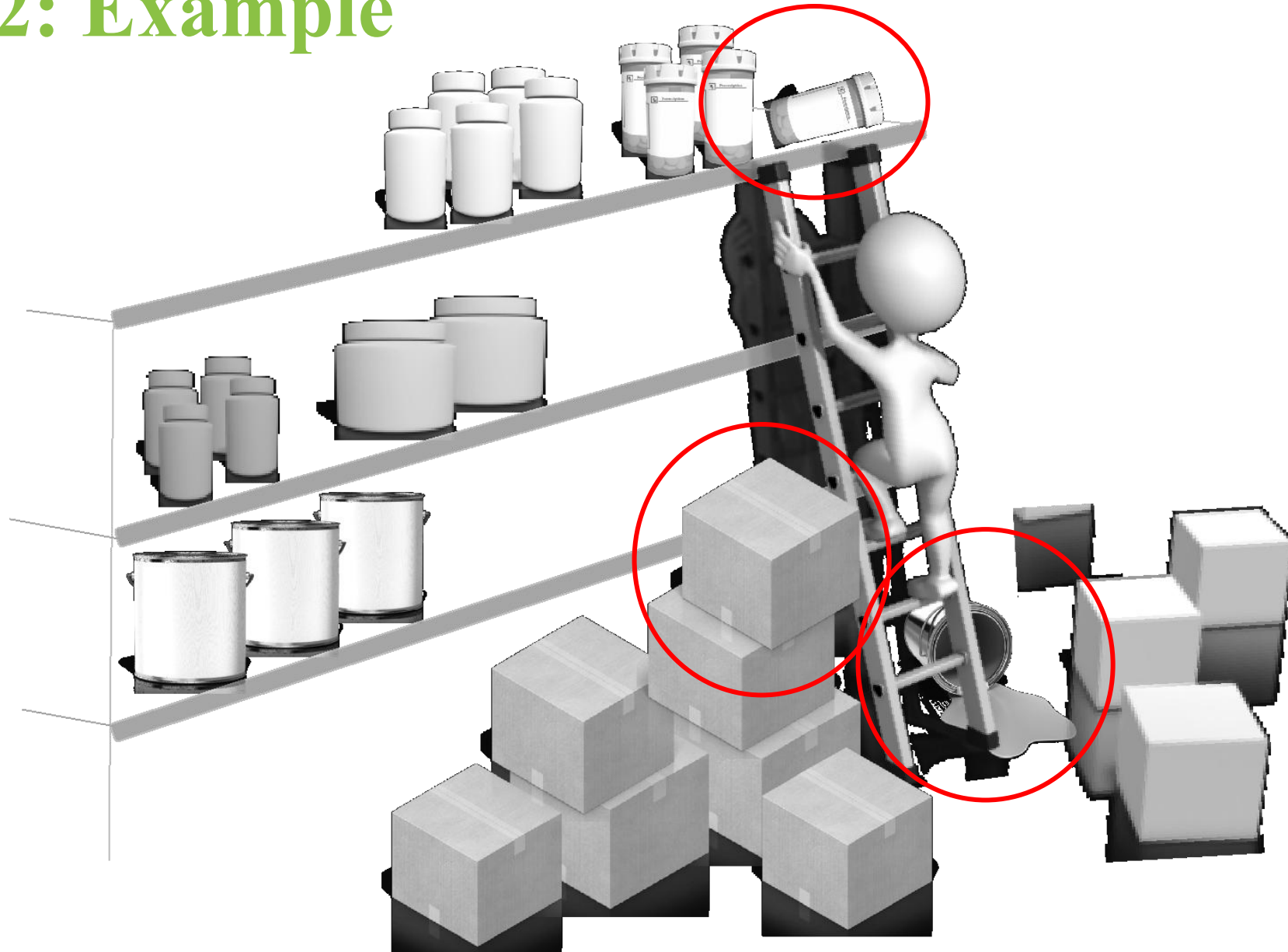
No.	Risk factors	Accidents/incidents
<i>1</i>	<i>Since the ladder is standing on the spilled water and it is sliding,</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
<i>2</i>	<i>Since many bottles are store on the shelf,</i>	<i>the bottles falls down and hits him on the head.</i>
<i>3</i>	<i>Since box are piled next to the ladder a and the box is about falling down to hit ladder</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
<i>4</i>	<i>Since he climbs down the ladder without looking behind,</i>	<i>he stumbles on the bucket and falls</i>
<i>5</i>		
Significant hazards	Preventive Measures	



## Round 2: Identify the Vital hazard

1. Mark significant hazards with “○” according to its probability and seriousness
2. Mark the most significant hazards with “◎” by common consent
3. Consider the background as well (Why the situation was like that? Why he/she behaves so?)

# Round 2: Example



# Round 2: Example

## HPT Sheet

Date: 13/6/2020

Leader: *John (MD)*

Members: *Mpinde, Kombo, Jovani, Mapunda*

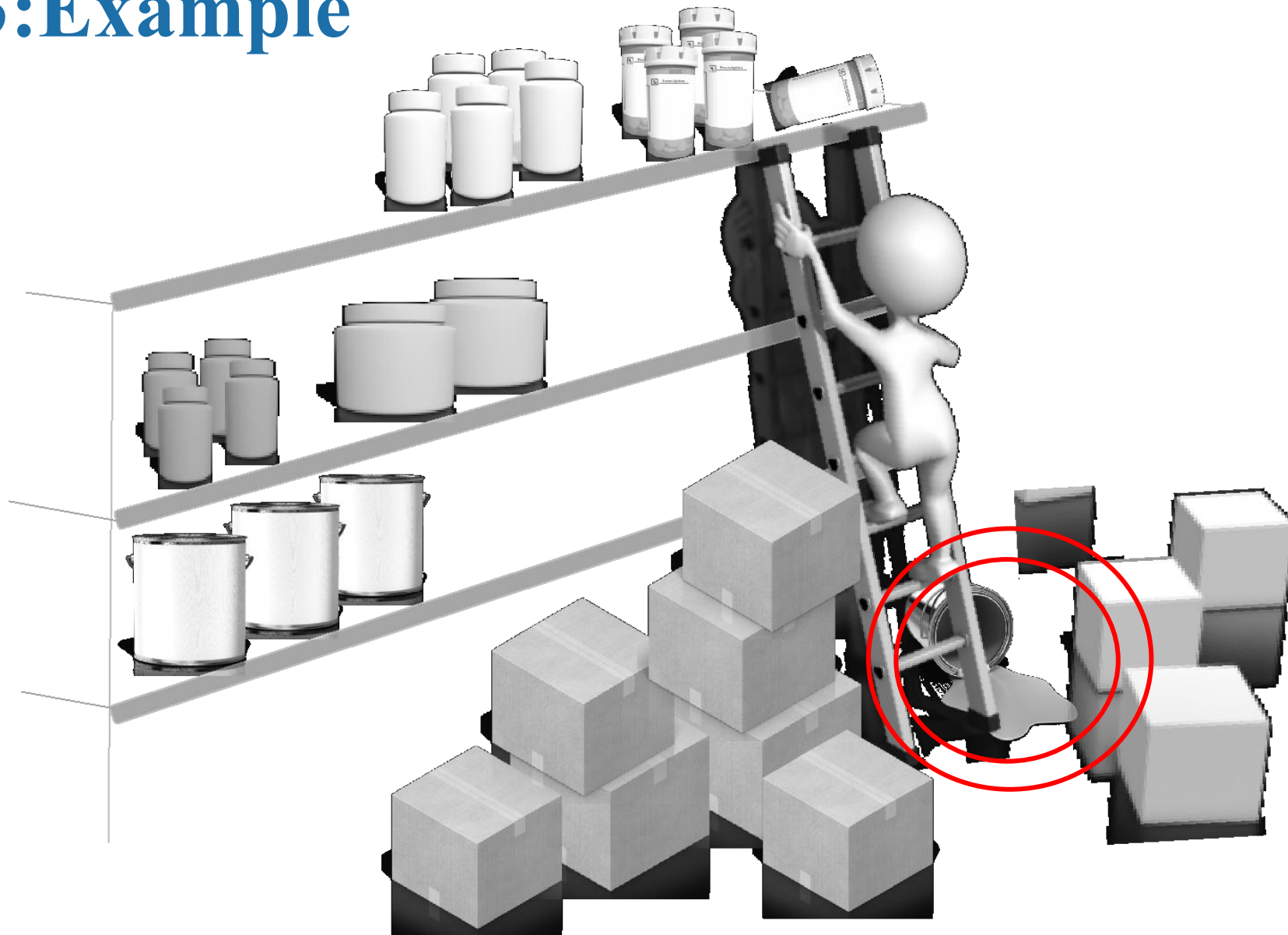
No.	Risk factors	Accidents/incidents
1	<i>Since the ladder is standing on the spilled water and it is sliding,</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
2	<i>Since many bottles are store on the shelf,</i>	<i>the bottles falls down and hits him on the head.</i>
3	<i>Since box are piled next to the ladder a and the box is about falling down to hit ladder</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
4	<i>Since he climbs down the ladder without looking behind,</i>	<i>he stumbles on the bucket and falls</i>
5		
Significant hazards	Preventive Measures	



## Round 3: Develop preventive measures

1. Discuss possible preventive measures to prevent the accidents identified in Round 2
2. Preventive measures should be specific and feasible
3. Describe them in positive phrase, not use negative phrase

# Round 3: Example



# Round 3: Example

## HPT Sheet

Date: 13/6/2020

Leader: John (MD)

Members: Mpinde, Kombo, Jovani, Mapunda

No.	Risk factors	Accidents/incidents
1	<i>Since the ladder is standing on the spilled water and it is sliding,</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
2	<i>Since many bottles are store on the shelf,</i>	<i>the bottles falls down and hits him on the head.</i>
3	<i>Since box are piled next to the ladder a and the box is about falling down to hit ladder</i>	<i>a staff loses his balance and gets injuries by falling off the ladder</i>
4	<i>Since he climbs down the ladder without looking behind,</i>	<i>he stumbles on the bucket and falls</i>
Significant hazards	<b>Preventive Measures</b>	
1	<ul style="list-style-type: none"> <li>• <i>Arrange all the items properly and make a space for safety work</i></li> <li>• <i>Keep the boxes in order</i></li> <li>• <del><i>Do not pile the boxes on the top shelf</i></del></li> <li>• <i>Set the highest level of piling boxes and arrange the boxes under the level</i></li> </ul> <p style="text-align: right;"><b>Avoid using negative sentence</b></p>	



## Round 4: Set the target/objectives

1. Select the most important and feasible preventive measures by common consent (all members' agreement )
2. Selected one as the target of the team to prevent accidents/incidents
3. Point the finger to the selected measures and repeat out loudly

# Round 4: Example

## HPT Sheet

Date: 13/6/2020

Leader: John (MD)

Members: Mpinde, Kombo, Jovani, Mapunda

No.	Risk factors	Accidents/incidents
1	Since the ladder is standing on the spilled water and it is sliding,	a staff loses his balance and gets injuries by falling off the ladder
2	Since many bottles are store on the shelf,	the bottles falls down and hits him on the head.
3	Since box are piled next to the ladder a and the box is about falling down to hit ladder	a staff loses his balance and gets injuries by falling off the ladder
4	Since he climbs down the ladder without looking behind,	he stumbles on the bucket and falls
Significant hazards	Preventive Measures	
1	<ul style="list-style-type: none"> <li>• Arrange all the items properly and make a space for safety work</li> <li>• Keep the boxes in order</li> <li>• Set the highest level of piling boxes and arrange the boxes under the level</li> </ul>	

# Round 4: Set the target (cont.)

- Point the finger to the selected measures and repeat out loudly:



<http://www.mh.nagasaki-u.ac.jp/kaihatu/photo/medical/h21/0826/images/04.jpg>

# Effects of pointing and calling

Risk of making mistake can be reduce 1/6

- No action : 100
- Calling only: 42
- Pointing only : 32
- Pointing and Calling : 16



①  
Direction of  
attention

②  
Effect of  
multiple  
confirmation

③  
Awakening of  
brain

④  
Prevention of  
inpatient  
reaction

① Look at what to check (“target”)



② Pointing your finger to the “target”



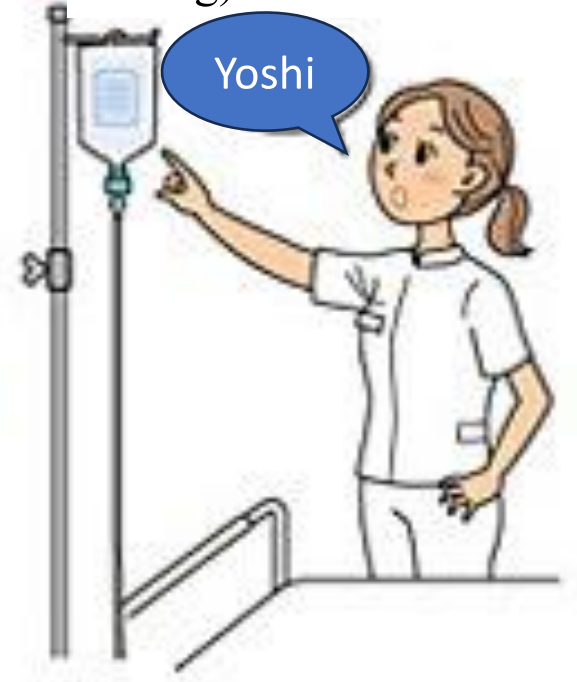
**Look at the “target” and check the condition**

③ Bring your right hand around your ear



**Think and make sure that the “target” is really in good condition**

④ Swing down and say “Yoshi!” (pointing & calling)



**Confirm the “target” condition**

# Pointing and Calling



Source of pictures:

[http://www.toyoura-saiseikai.jp/section/files/1250744616\\_2.jpg](http://www.toyoura-saiseikai.jp/section/files/1250744616_2.jpg)

<http://blog-imgs-32.fc2.com/h/c/e/hceme/20090816094604f3a.jpg>

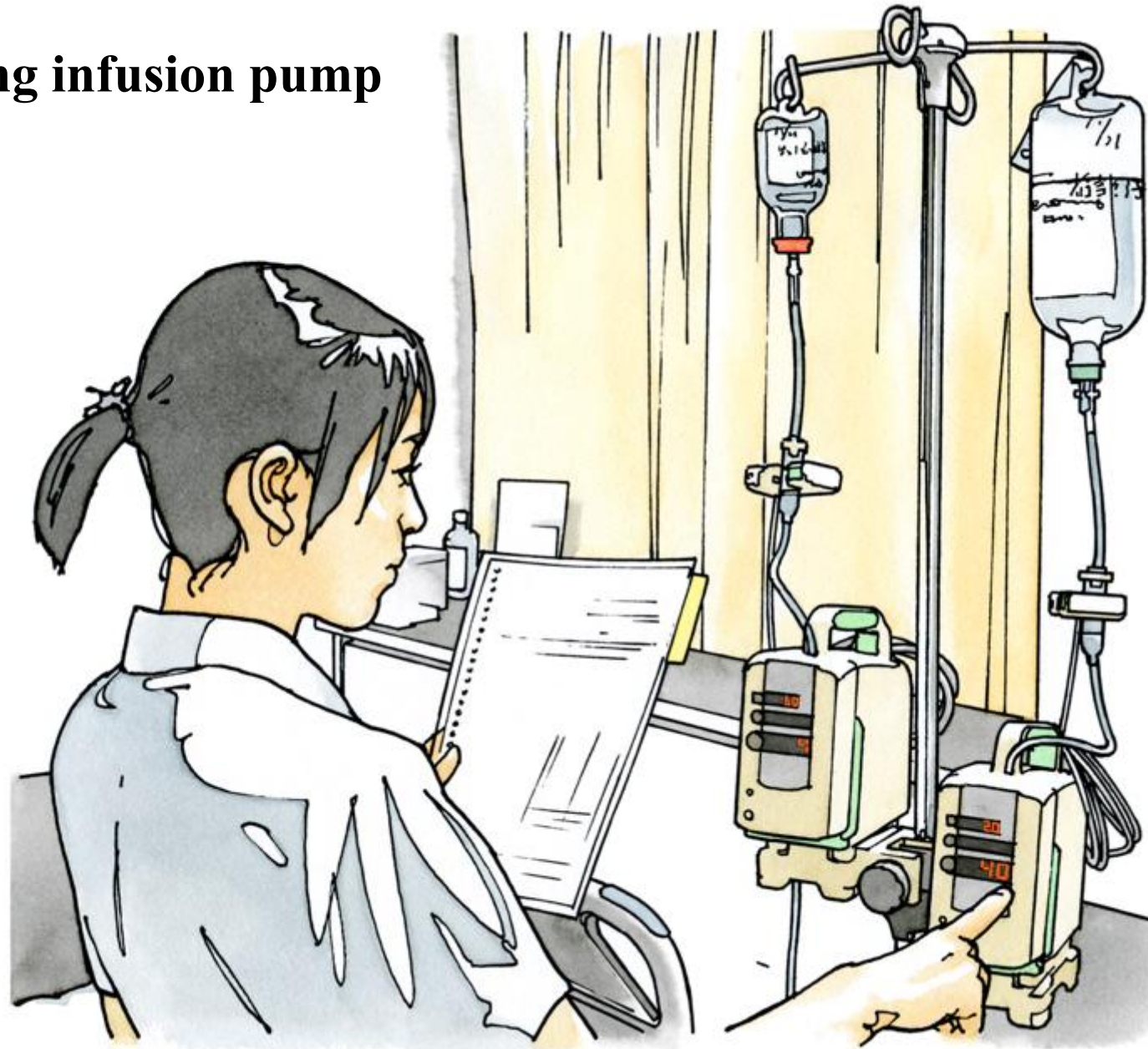
# How to apply HPT to your duty for safety improvement

- 1) Introduce HPT at several occasion
    - There are many topics around you in your daily working life
    - It is important to practice this exercise continuously (e.g. During morning report, 5-10 minutes is enough)
  - 2) When a “near-accident” happens, you can apply “4 round method” to write the accident report
- **Openness** is important.
- to reduce accidents
  - to improve quality and safety

# **Examples of HPT illustration and pictures**



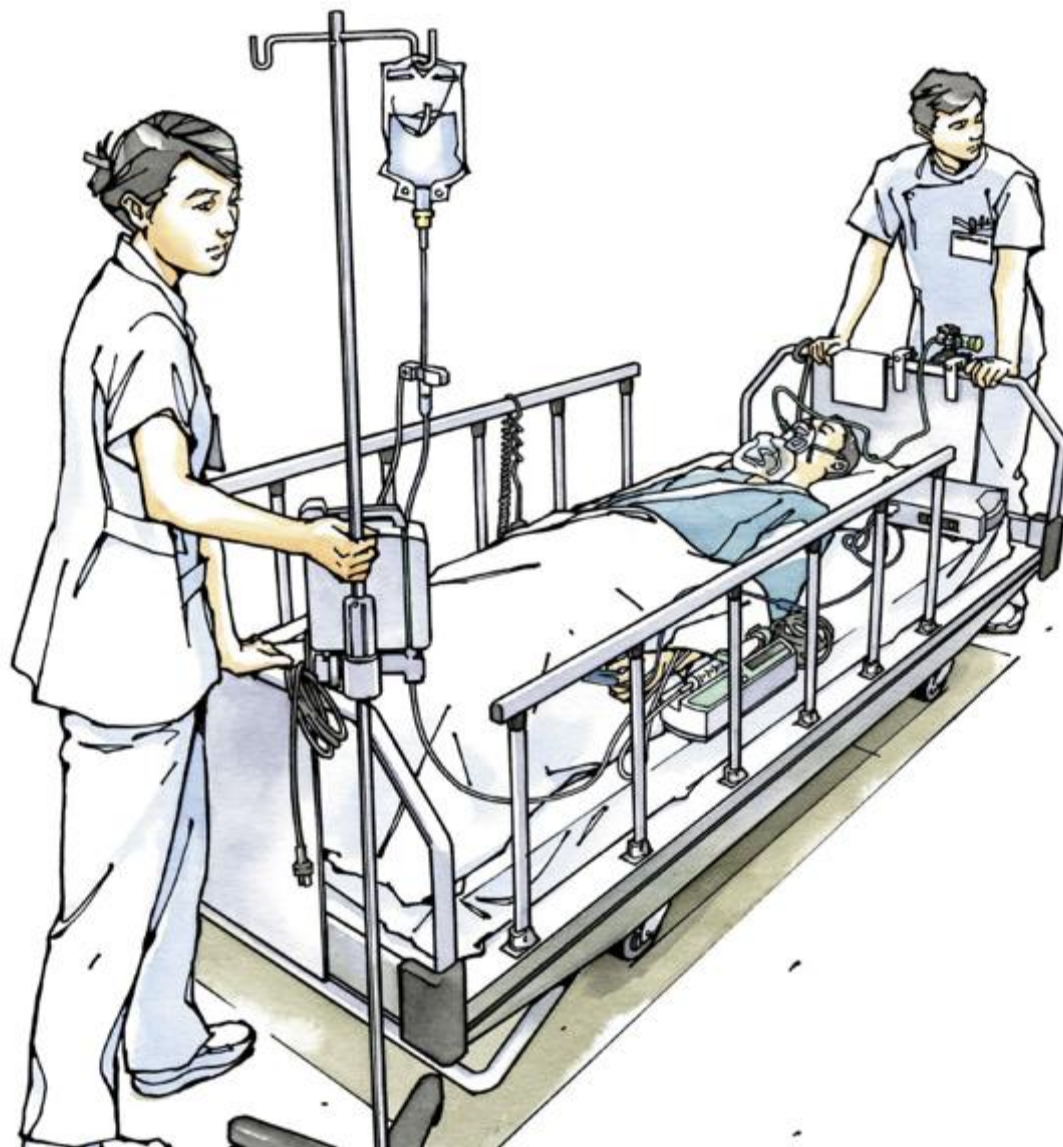
## Operating infusion pump



Source: <https://gakken-mesh.jp/info/static/kyt> illustration : Touji Shimamura

Prepared by Fujita Planning Co., Ltd.

# Transferring the patient from ICU



Source: <https://gakken-mesh.jp/info/static/kyt>

illustration : Touji Shimamura

Prepared by Fujita Planning Co., Ltd.



「医療安全」掲載  
Illustration : 島村陶治

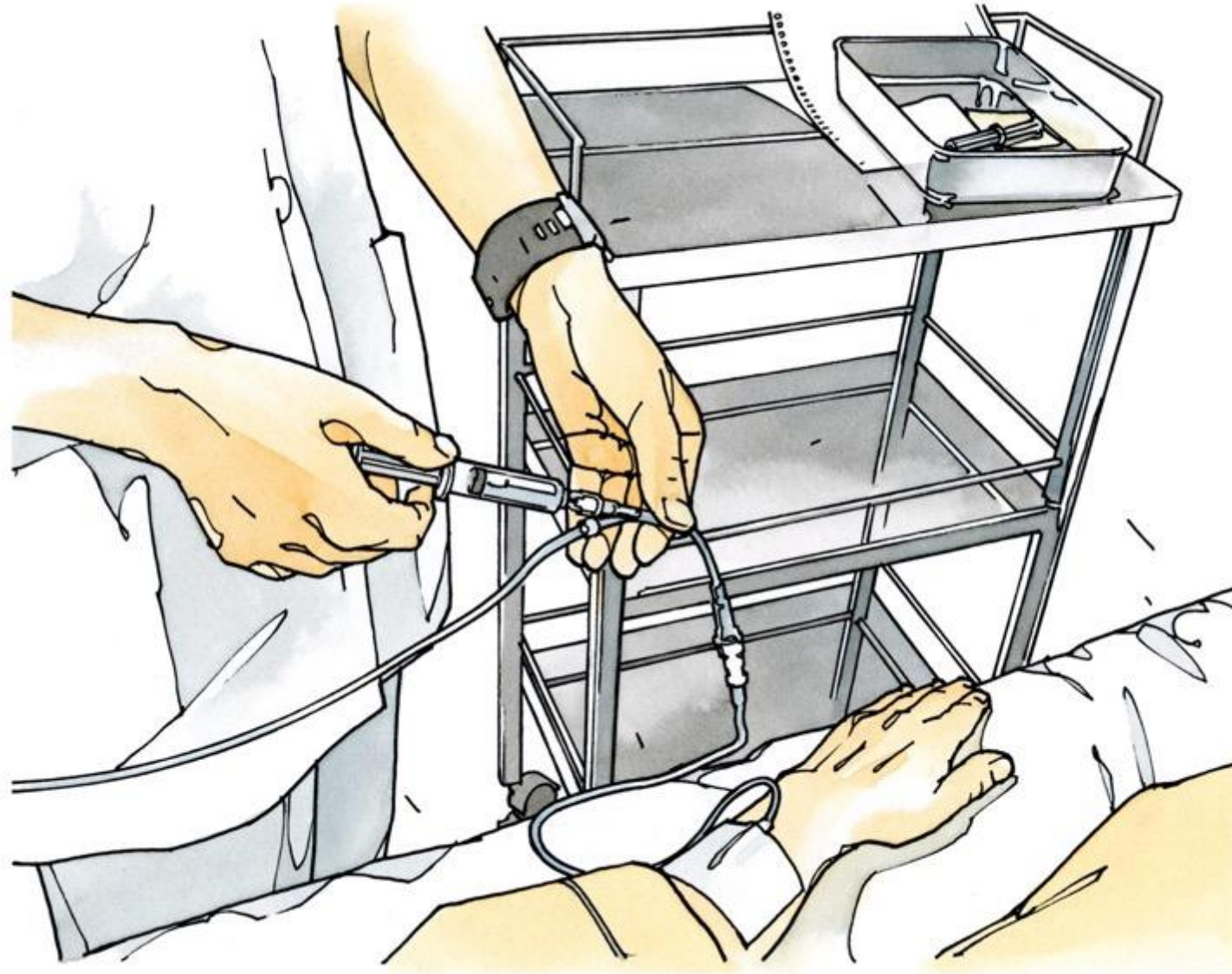
「医療安全」掲載  
illustration : 島村陶治



Source: <https://gakken-mesh.jp/info/static/kyt>

illustration : Touji Shimamura

Prepared by Fujita Planning Co., Ltd.



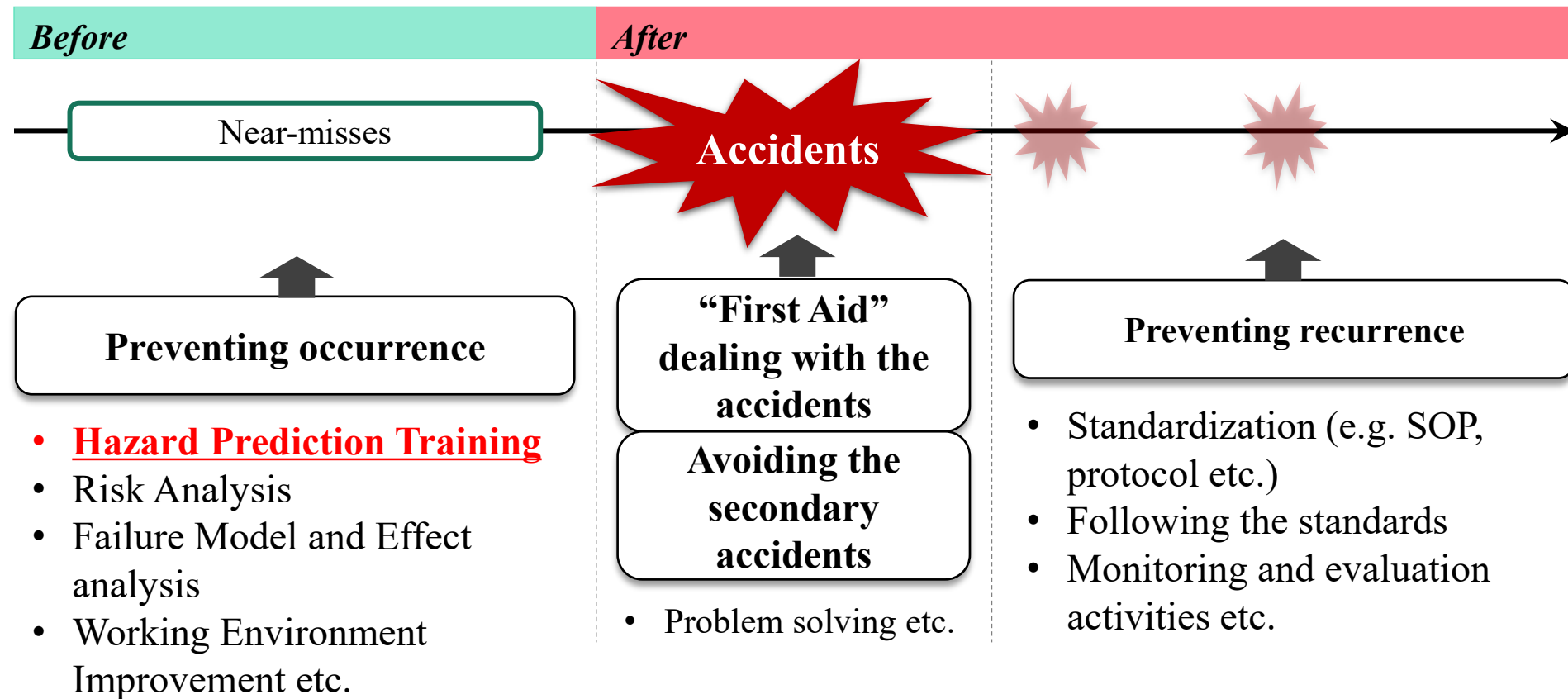
Source: <https://gakken-mesh.jp/info/static/kyt>

illustration : Touji Shimamura

Prepared by Fujita Planning Co., Ltd.

# Wrap-up

# Necessary approaches for safety (before and after occurrence)



# Thank You!

Any question, comments, clarification you need?