VII…Cases and Stories

VII-1…Case of National Rollout of 5S-KAIZEN-TQM in Tanzania (Reference for Chapter I and II)

This case describes how to disseminate 5S-KAIZEN-TQM approach harmonized with the other quality program.

National Rollout of 5S-KAIZEN-TQM approach in Tanzania

Hisahiro Ishijima
Japan International Cooperation Agency (JICA) expert, assigned to Ministry of Health and Social Welfare, United Republic of Tanzania

Provision of quality health care is one of the top priorities of Health Sector Strategic Plan III in Tanzania. It is stated clearly that the emphasis will be on putting developed quality improvement systems in place and introduce a quality culture in the health sector, which makes health workers proud and self-confident.

The Ministry of Health and Social Welfare (MoHSW) applied for AAKCP and selected Mbeya Referral Hospital (MRH) as a pilot hospital and the pilot hospital started implementing 5-S activities since August 2007.

According to the monitoring and evaluation of 5-S activities at MRH, which was conducted December 2007, 5S-KAIZEN-TQM was verified as a practical, cost effective and efficient approach for improvement of working environment that support the effective implementation of quality improvement approaches. Therefore, MoHSW have adopted 5S-KAIZEN-TQM concepts officially as a foundation of all quality improvement approaches in the country and decided to scale up this approach to other hospitals.

For the national rollout of 5S-KAIZEN-TQM approach, the following steps were taken. The first step was to disseminate 5S-KAIZEN-TQM concepts to MoHSW, and key hospitals for official approval of pilot program implementation. This was accomplished by showing pictorial evidences of improvement from Mbeya Referral Hospital and experience from Sri Lanka. A basic concept of 5S-KAIZEN-TQM was introduced in this seminar, and the participants decided to execute pilot program at two hospitals: Mbeya Referral Hospital and Muhimbili National Hospital.

Next step was to execute pilot programs at Mbeya Referral Hospital and Muhimbili National Hospital to see more about effectiveness, efficiency and cost performance of the approach. The two pilot projects were successfully implemented and reported to MoHSW management, and it was adopted officially as a Quality Improvement approach in Tanzanian health sector.

Third step was harmonization and coordination of Quality Improvement programs. MoHSW took initiative to harmonize and coordinate all QI Programs that were introduced into Tanzanian Health sector. Various QI approaches were introduced into the health sector, however, these QI approaches were not integrated, and implemented area based. It was also focused mainly on vertical programs, such as HIV care and treatment program, which make MoHSW to apply them for different settings. Lessons learned from introduction of other QI approaches and experiences from 5S-KAIZEN -TQM pilot hospitals, the following methods were carried out:

Training of Trainers (TOT) on 5S-KAIZEN -TQM approach was conducted 3 times to train all national, specialized, regional referral and some municipal hospitals. Total of 29 hospitals were

trained though TOT.
Progress Report Meeting (PRM) was applied to support hospitals that are implementing 5S activities. It is held bi-annually and hospitals present their activities. During the meeting, critiques are made by facilitators and participants for further improvement of activities. Learning sessions are conducted together with PRM for skills-up.
Consultation visit and evaluation was applied to support Quality Improvement Team of hospitals technically on the spot. 5-S consultants are visiting 5-S implementing hospitals and evaluate the current status of activities. Standardized 5-S monitoring and evaluation sheet is used to assess the progress of 5-S implementation and provide technical advices to QIT for appropriate implementation of 5-S activities.
5S poster was developed in both English and Swahili language for disseminating 5-S concept to health workers. It is distributed to public hospitals and displayed at public hospitals.
"Implementation guideline for 5S-CQI-TQM approaches in Tanzania" was developed to guide health workers to gain knowledge on 5S-KAIZEN-TQM approaches, and standardize implementation steps for rolling out of the approach nationally.

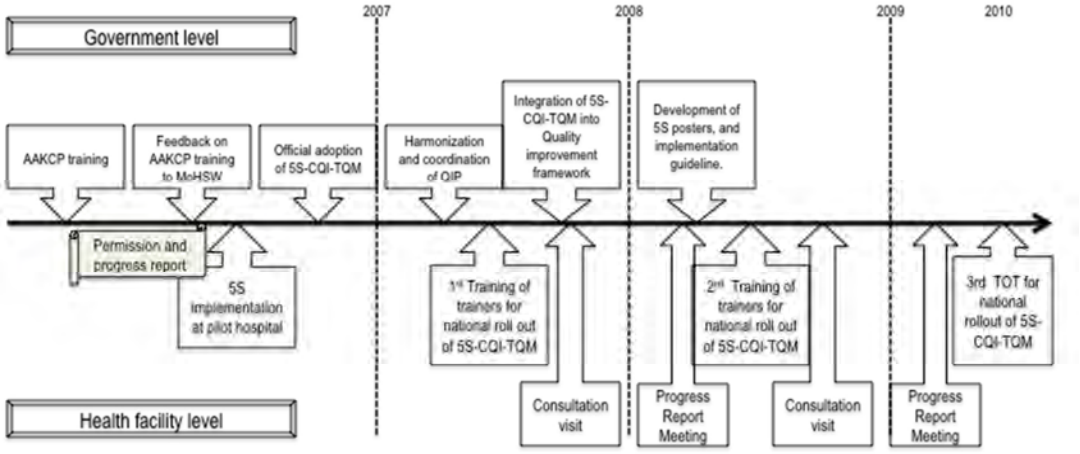


Figure 1: National Rollout process

Currently, total 36 hospitals are practicing 5S-KAIZEN activities. For the sustainability of 5S-KAIZEN-TQM at hospitals, MoHSW are continuously conducting PRM and Consultation visit bi-annually.

From the past experiences, it is clear that effective training mechanism, periodical technical back up and follow-up to the hospitals are extremely important for further improvement and sustainability.

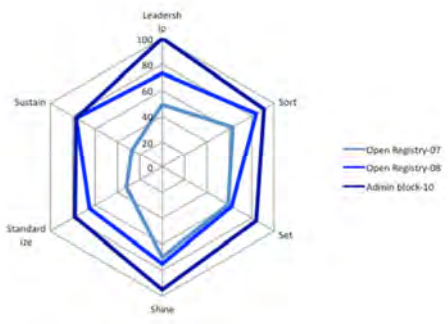


Figure 2: Radar chart for progress check

Figure 3: Consultation visit by MoHSW Officials

VII-2…Case of trainings for 5S-KAIZEN-TQM approach in Tanzania (Reference for Chapter II)

This case describes the training steps and results of the training.

Training of Health Workforces for implementation of 5S-KAIZEN-TQM
The case of a National Training of Trainers in Tanzania -

Hisahiro Ishijima
Japan International Cooperation Agency (JICA) expert, assigned to Ministry of Health and Social Welfare, United Republic of Tanzania

Ministry of Health and Social Welfare (MoHSW) adopted 5S-KAIZEN-TQM concepts officially as a foundation of all quality improvement approaches in the country since 2007. Effectiveness and efficiency of 5S-KAIZEN-TQM approach was demonstrated through pilot project at Mbeya Referral Hospital, and MoHSW made decision to scale up this effective approach to all consultants, specialized and regional referral hospitals in the country.

In March 2008, Health workforces and managers, who are trained on 5S-KAIZEN-TQM approach and other quality improvement methodologies, gathered and discussed how can MoHSW train consultant, specialized and regional referral hospitals on 5S-KAIZEN-TQM approach in effective way and came up the following areas to be taught to hospitals:

Basic concepts of quality and quality improvement in health sector
Basic knowledge and skills for implementation of 5S-KAIZEN-TQM approach
Planning, coaching, monitoring and evaluation of quality improvement program

Base on the decision, Training of Trainers (TOT) on 5S-KAIZEN-TQM approach is organized. Selection of participants was also discussed. At the beginning of discussion, “train key personnel in zone” was discussed; however, suggestion from experts of 5S-KAIZEN-TQM approach and lesson learnt from Sri Lanka, importance of strong leadership and commitment at facility level was raised as a key for successful implementation of the approach. MoHSW took advices from the experts and came up a strategy to train and Medical Officer in-charge, Matron/Patron and Health secretary from each hospital.

Following the rollout plan, TOT was conducted annually since July 2008, and total 29 public hospitals were trained. Unfortunately, effectiveness of 1st TOT was not evaluated as the necessity of evaluation was raised during the review meeting of 1st TOT.

From the 2nd TOT, effectiveness of training was measured by pre assessment and post assessment, and evaluation of subjects and logistics by participants. Same questions were asked in both pre assessment and post assessment for comparison of knowledge improvement on quality and quality improvement approach. At the pre-training assessment, majority of participants (32 out of 39) got low score (percentage of correct answer: less than 65%). However, at the post-training assessment, 24 participants out of 39 got more than 75% of correct answers. However, 4 participants out of 39 showed no or little improvement of knowledge.

Table 1: Results of Pre and post Assessment at 2nd TOT

Assessment	Results (%)		
	Lowest	Highest	Average
Pre Assessment	36	80	54.8
Post Assessment	46	98	76.1

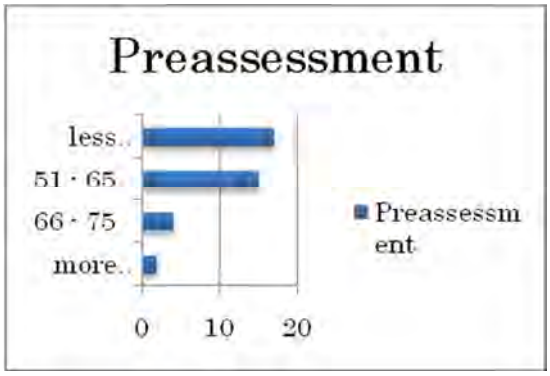


Figure 1: Pre-assessment result of 2nd TOT

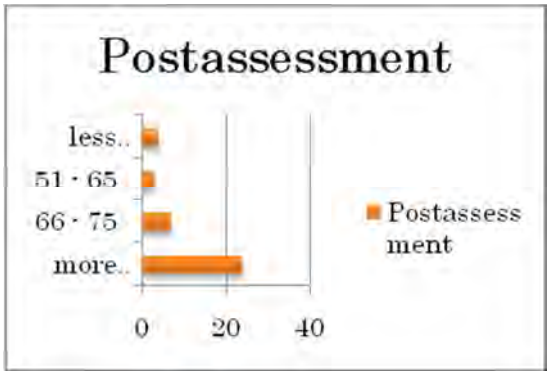


Figure 2: Post-assessment result of 2nd TOT

To know the effectiveness of each subject and logistics, all lectures and practices that were taught in the TOT were listed on the evaluation sheet. The evaluation sheet is used three rankings ("not helpful", "helpful" and "very helpful") to evaluate each subject and logistics.

Attendance rate of 2nd TOT was 97.5% whereas 65.2% indicated that the training was very helpful. 25.1% pointed out that the training was helpful but it necessary to have more time for practices, some of the practical exercise was not given enough time such as Action plan development.

According to the pre and post assessment result and evaluation for effectiveness of each subject and logistics, we conclude that the training was useful to improve knowledge and skills on quality improvement through 5S-CQI-TQM approach.

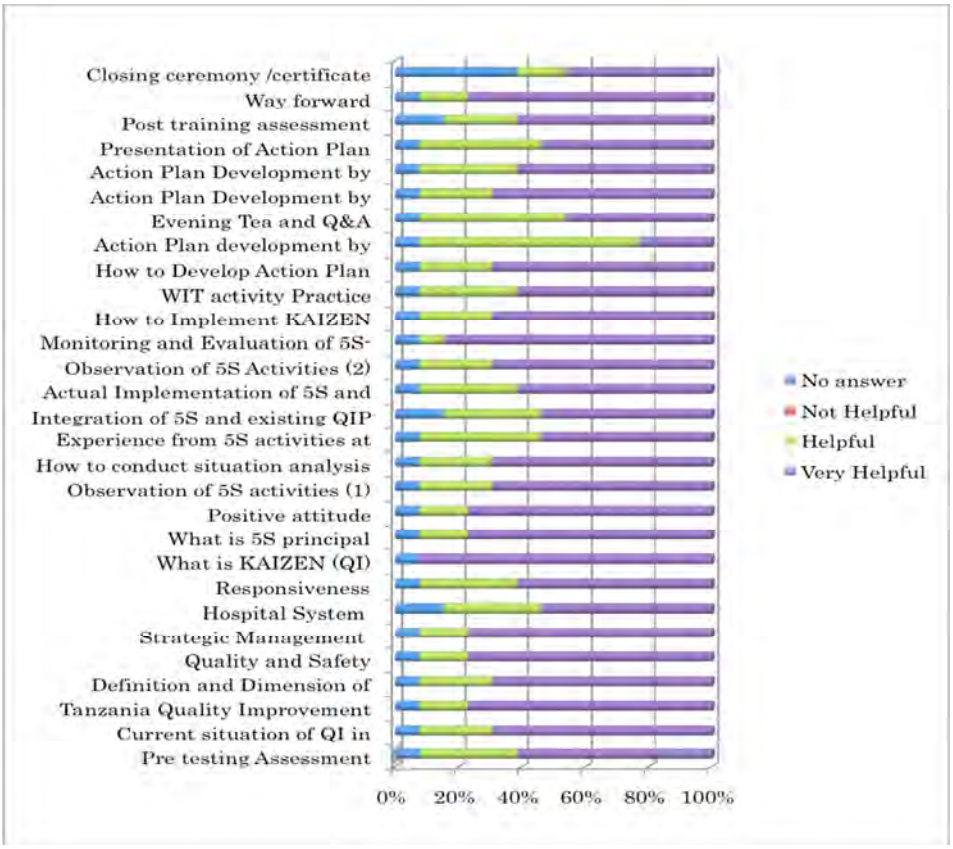


Figure 3: Evaluation result of subjects and logistics by participants

VII-3…Case of the impact to Nursing Services by 5S-KAIZEN-TQM approach in Madagascar (Reference for Chapter III)

This case describes the impact of 5S-KAIZEN-TQM approach in Teaching hospital, Madagascar.

The Contribution of Improvements in Nursing Management to the "Quality of Services" in Hospitals.
-The Case of a University Teaching Hospital in Madagascar-

Noriaki Ikeda[1], Olga Razanakinianina[2], Catherine Cauchoix[3]

[1]Bureau of International Medical Cooperation, International Medical Center of Japan, Tokyo, Japan,
[2]Centre Hospitalier de l' Universite du Mahajanga, Mahajanga, Madagascar, [3]Cooperation Francaise

A "Work Environment Improvement (WEI)" evaluation was carried out under the JICA Asia-Africa Knowledge Co-Creation Programme (AAKCP) at Mahajanga University Hospital, Madagascar (CHUM) in February 2008. CHUM was nominated as one of 8 pilot hospitals for the AAKCP in 8 African countries.

A joint evaluation team with experts from both Sri Lanka and Japan revealed that CHUM had demonstrated substantial achievements in WEI, in comparison with the other pilot hospitals. The mission also recognized some evidence of "Continuous Quality Improvement (CQI=KAIZEN)" in some of the hospital's patient wards.

The objective of this presentation is to show how the hospital succeeded in realizing WEI under a strategic hospital management plan with a specific focus on nursing management, and the role it can play in achieving an improvement in the quality of hospital care.

French Cooperation undertook an extensive situation analysis of nursing management at the hospital in 2002. The first action taken by CHUM after the analysis was to establish a Nursing Department (ND) and integrate it within the hospital's administrative structure. One of the deputy hospital directors was thereafter assigned as "General Chief Nurse". This organizational reform contributed to the rationalization of resource management in the nursing workforce and also to the creation of bi-lateral bottom-up and top-down managerial systems in the hospital administration.

The ND was authorized to plan and implement continuing managerial education for head nurses and also sessions to improve case management skills for the staff nurses. Those training courses were conducted in collaboration with the Regional Paramedical Education Institute. The ND then carried out post-course monitoring of "good practice" in nursing care at the hospital.

The ND also improved routine managerial nursing activities by applying working tools such as planning dossiers, care protocols, and job descriptions etc. All of the activities mentioned brought about the following favorable results in managerial practices:

Plan-Do-See management is practiced daily in nursing management,
There is improved traceability of nursing activities and transmission of information among the staff due to the management tools,
Communication among between the staff and patients improved.

In relation to the development of the ND's activities, an "Infection Control Team" was organized at the hospital. A useful patient information system, which included registration and medical records, was placed and made functional in the patient reception department.

This study strongly suggests that reinforcing nursing management practices by undertaking organizational reform can tangibly contribute to the implementation and maintenance of WEI, which is essential to provide the managerial infrastructure necessary for CQI=KAIZEN as well as to achieve higher level targets in the quality of services provided by hospitals.

(23d General Meeting of the Association of Japanese International Health, October 2008, Tokyo)

Figure 1: Example of improvement

Plastic bottles is used as towels keeper at washing place in delivery room

VII-4…Case of successful implementation of 5S in Tanzania (Reference for Chapter III and IV)

This case describes the success of 5S activities and monitoring procedure in a hospital.

Keys for successful implementation of 5-S approach in hospitals
The case of a National Referral Hospital in Tanzania-

Hisahiro Ishijima
Japan International Cooperation Agency (JICA) expert, assigned to Ministry of Health and Social Welfare, United Republic of Tanzania

As an entry point of quality improvement of health care, 5S-KAIZEN-TQM approaches verified its effectiveness in different sector. Japan International Cooperation Agency (JICA) planned to introduce the approach into health sector and organized Asia-Africa Knowledge Co-Creation Program (AAKCP) in 2007.

Tanzania has participated this program and Ministry of Health and Social Welfare (MoHSW) selected Mbeya Referral Hospital (MRH) as pilot hospital of AAKCP and the hospital started implementing 5S activities since August 2007. Since then, the hospital is pioneer of 5S implementation in the country, and has been contributing a great number of activities related with expansion of 5S-KAIZEN approaches in Tanzania.

To monitor progress of 5S-KAIZEN-TQM activities, MoHSW and JICA jointly conducted evaluation three times since August 2007.

The methodology used during the evaluation included, interview with the QIT members and staff in the targeted areas; observation of 5-S target areas; and taking photographs as record of 5-S implementation process. Evaluation of the target areas was done using standardized score checklist and results analyzed.

During 3rd evaluation, 12 areas were observed and evaluated the progress of 5S-KAIZEN activities with standardized evaluation format. According to the hospital, they are categorizing 5S implementation areas into two areas: Phase 1 areas (started 5S activities in 2007) and Phase 2 areas (started 5S activities in 2009).

The phase 1 areas were implementing 5S activities very well not only properly sorted and set but also workflow is well considered and practiced in standardized manner. Moreover, teamwork spirit is well spread among staff to improve working environment and health service contents. On the other hand, the phase 2 areas, where started 5S activities since 2009, were yet to be like a phase 1 areas. Those areas are currently implementing S1 (Sort), S2 (Set), and S3 (Shine) activities to create foundation of quality improvement. Hospital staff who is working in those areas is well trained and majority of those areas had strong leadership and commitment to create good working environment.

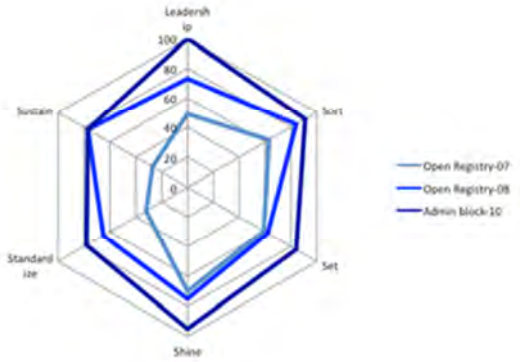


Figure 1: Comparison of evaluation results

Figure 2- (1): 3rd Evaluation results of Administration block (1)

Figure 2-(2): 3rd Evaluation results of Administration block (2)

Figure 1 and Figure 2(1), and (2) are evaluation results of MRH Administration block that indicate how MRH management is committed and showing strong leadership on implementation of 5S-KAIZEN-TQM approaches. Evaluation results of other areas are also showing same trend. Hospital staff, who is working in those areas is well trained and majority of those areas had strong leadership and commitment to create good working environment.

Aug.2007 (before 5S) Feb. 2008 (process)

Aug.2008 (after 5S) Mar. 2010 (color corded)

Figure 3: Before and after 5S

The success of 5S-KAIZEN implementation at MRH are recognized not only in Tanzania but also recognized by other AAKCP participated countries and JICA Headquarters. Therefore, Joint Evaluation Mission planned to elucidate the factors for successful implementation of 5S-KAIZEN-TQM approaches at MRH, and analyzed information obtained through past three evaluations.

Learning from the experiences and evaluation results of 5S-KAIZEN-TQM approaches at MRH, the joint evaluation mission concluded that there are some keys for successful implementation of 5S-KAIZEN activities and emphasis of those keys can be applied for national rollout of the approaches. Those are summarized as follows:

- Clear understanding of roles and responsibility by top management creates strong leadership
- Step by step expansion of target areas with appropriate training (5days for 5S and 3 days for KAIZEN) for creating strong foundation of 5S activities
- Proper structure for Quality Improvement, and clear ToR, roles and responsibility of QIT and WIT
- Open information sharing policy to all staff working in the hospital using 5S corner
- Being the model of 5S-KAIZEN approach in the country, and receiving lots of visitors, which increase motivation of staff for implementation of 5S-KAIZEN activities

Teaching materials and lectures of 3rd Training of Trainers on 5S-KAIZEN-TQM will reflect the above-mentioned conclusions. MoHSW and lecturers are convinced that it will help participant hospitals of the training to gain tactics to make their 5S-KAIZEN activities successful.

VII-5…KAIZEN case at Mbeya Consultant Hospital in Tanzania (Reference for Chapter III)

VII-5-1…A good example of KAIZEN at the Central Store Department

Shizu Takahashi
Japan International Cooperation Agency (JICA) expert, the project for HRH Development, United Republic of Tanzania

Background

Mbeya Consultant Hospital launched KAIZEN activities in 2010 after the hospital management staffs participated in KAIZEN training in Japan in 2009. There were 5S pilot areas where 5S-KAIZEN-TQM approaches had been introduced as the 1st phase in November 2007. There areas, namely OPD, Central Store Department, Administration Block, Medical Record, Surgical Ward and Pediatric Ward, were picked as pilot areas of KAIZEN implementation and were trained on KAIZEN at the internal training in 2010.

KAIZEN teams were established in the WITs at respective areas to carry out KAIZEN activities. Each KAIZEN team selected KAIZEN themes as follows;
OPD: Waiting time for patient consultation is reduced
Central Store Department: Overstocking and redundant of stock in the central store department is reduced
Administration block: Revenue collection is improved
Medical Record: Waiting time to get patient's file is reduced
Surgical Ward: Postponement of operations is reduced
Pediatric Ward: Over prescription of Quinine injection is reduced

There is a good example of KAIZEN at the Central Store Department (the Central Store) for reduction of "MUDA"(wastes) and improvement in inventory of medical supplies, which also saved financial resource of the hospital.

The Central Store is among the 14 departments in Mbeya Consultant hospital. The Central Store is divided into 2 functional sections, that is to say, Procurement Section and Store Keeping Section.

The ordinary procurement and supply process of Mbeya Consultant Hospital was that the departments identified required items at first, and submitted the request to the Central Store Department. Then the Central Store procured the identified items from agencies and supplied them to the departments on request basis.

The staff at the Central Store used to receive complaints from users that said necessary items such as medicines, equipment/instruments and other supplies were not available when needed, or the specifications of these items were not correspondent to what they required. Responding to the complaints, the Central Store staff established an "inspection team" to check the specifications, quality and quantity of items in the Central Store regularly so that appropriate items would be supplied

according to the requests at the time of need. However, the team did not function as expected and inspection activity was abandoned then.

Later on, the procurement and supplies circle in the Central Store became vicious, for instant, some of items were stored without being recorded in the ledger and goods were hidden behind instead of storing as per procedure. Eventually, items were piled and it resulted in redundant stock[3] and overstocking[4]. In such situation, supplier started to take advantage of weak stock management in the Central Store and to deliver items in very poor quality. It became to be difficult to control pilferage as well.

In order to improve the situation in the Central Store, KAIZEN team that was composed of ten (10) staff was established in April 2010.

Step1: Theme Selection

In light of the stock items accumulated in the Central Store and the above-mentioned problems, possible themes were discussed and scored according to the criteria that were Impact, Urgency, Realization, and Resource availability. As table xx shows, the possible theme that obtained the highest score was "Overstocking and redundant of equipment and instruments are reduced." and it was selected as KAIZEN theme.

Table 1: Theme selection table

No.	Possible themes	Impact	Urgency	Realization	Resources	**Total Score**
1	Overstocking and redundant of equipment/instruments is reduced	◎	○	◎	◎	**11**
2	Unsatisfactory services rendered to customers/departments or suppliers is reduced	△	×	△	△	**3**
3	Central store is managed appropriately	△	○	△	○	**6**

Note: ◎= 3 point, ○ = 2 point, △= 1 point, × = 0 point

Step 2: Situational analysis

In order to analyze the current situation of overstocking and redundant of items, first of all, the procurement and supply flow was reviewed. The information was obtained through group discussions among the staff and the observation, from their experiences and available data at the Central Store**.**

As explained above, procumbent of goods usually originated from the users. The user departments identified the need, filled in the requisition form and obtained the signature from section/unit supervisors. The endorsed request was taken to the Central Store and checked by the procurement officer to initiate purchase process as per government regulation. The items were usually purchased from Medical Store Department (MSD), Government Procurement and Supply Authority, private

[3] "Redundant stock" refers to materials that are kept in store for a long period of time without being used.
[4] Keeping of stocks over and above the required quantity at a given time of period is referred to as "overstocking"

tenders, donation from domestic organizations and international organization/agencies. Some goods that belong to partners working in collaboration with the hospital were also kept in the Central Store.

Upon receiving, goods were inspected and stored in the respective storage units in the Central Store. However, specifications were not confirmed by the user departments as they did not have competent technicians to discriminate the specifications.

Most of the work in the Central Store was done manually and bin cards were not recorded regularly. During daily 5S activities, the staffs recognized the presence of excessive category of stock. Staff tried to sort them as much as possible for appropriate setting and shining, however, they finally found it quite difficult since most of them were useful equipment/instruments that could not be classified as "goods to be disposed" or "unnecessary items".

Table 2: Frequency and accumulation table

No.	Observed type of stock	Number of items	Cumulative Frequency	Accumulation Ratio (%)
1	Equipment/Instrument	32	32	51.6
2	Medical supply	13	45	72.6
3	Stationery	8	53	85.5
4	Cleaning Material	5	58	93.5
5	Medicine	4	62	100
	Total	62	-	-

Secondly, the goods that were found as "overstocking" or "redundant" in the Central Store were categorized as "equipment/instruments", "medical supplies", "medical stationeries", "cleaning materials" and "medicines/drugs", and arranged in the table. As a result, it was found that majority of the equipment had been kept in the Central Store for 8-10 years e.g. the anesthetic machines, ENT machines, drip stands and microscopes. It was also observed that piling of good impaired the efficiency of work, as some of needed equipment could not be easily seen and it took time to find them or same goods were purchased unnecessarily.

Development of Pareto Chart

Subsequently, the Pareto chart was developed as shown below in order to identify and prioritize problems to be solved.

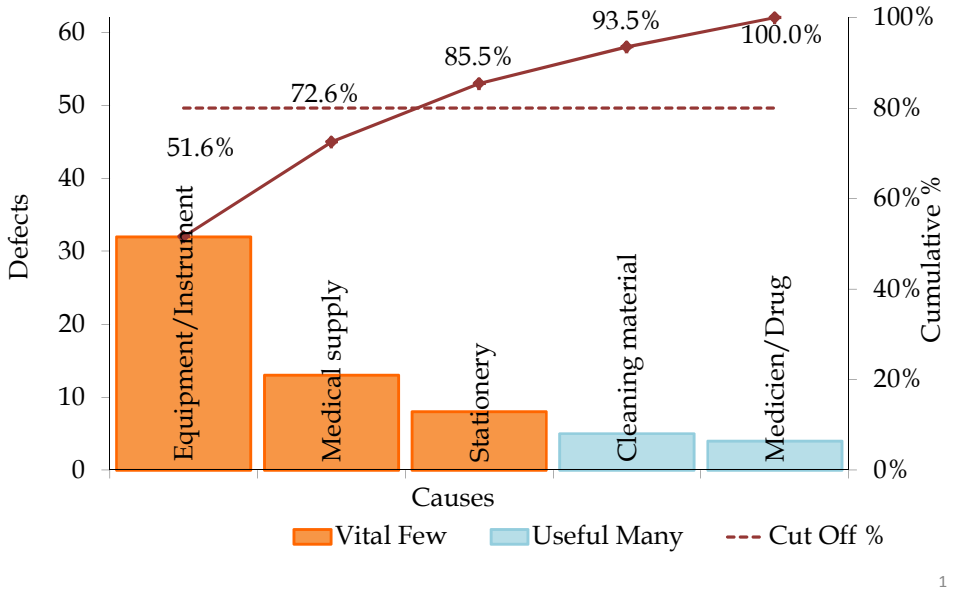


Figure 1: Pareto Chart on the redundant stocks and overstocked items

The cutoff point was 80% as the Figure 1 indicates, and the target was set to reduce the redundant stocks and overstocked items by 60% within six months and to maintain reorder level. From the developed Pareto chart, it was found that the causes to be solved in the Central Store as targets were Medical equipment/instruments, medical supplies and stationeries that occupied 85.5% of all the causes.

Step 3: Root Cause Analysis

Fishbone Analysis

In step 3, Fishbone analysis (Ishikawa diagram) was used in order to clarify a cause-effect relationship that the identified problems attributed to. The developed diagrams are shown below.

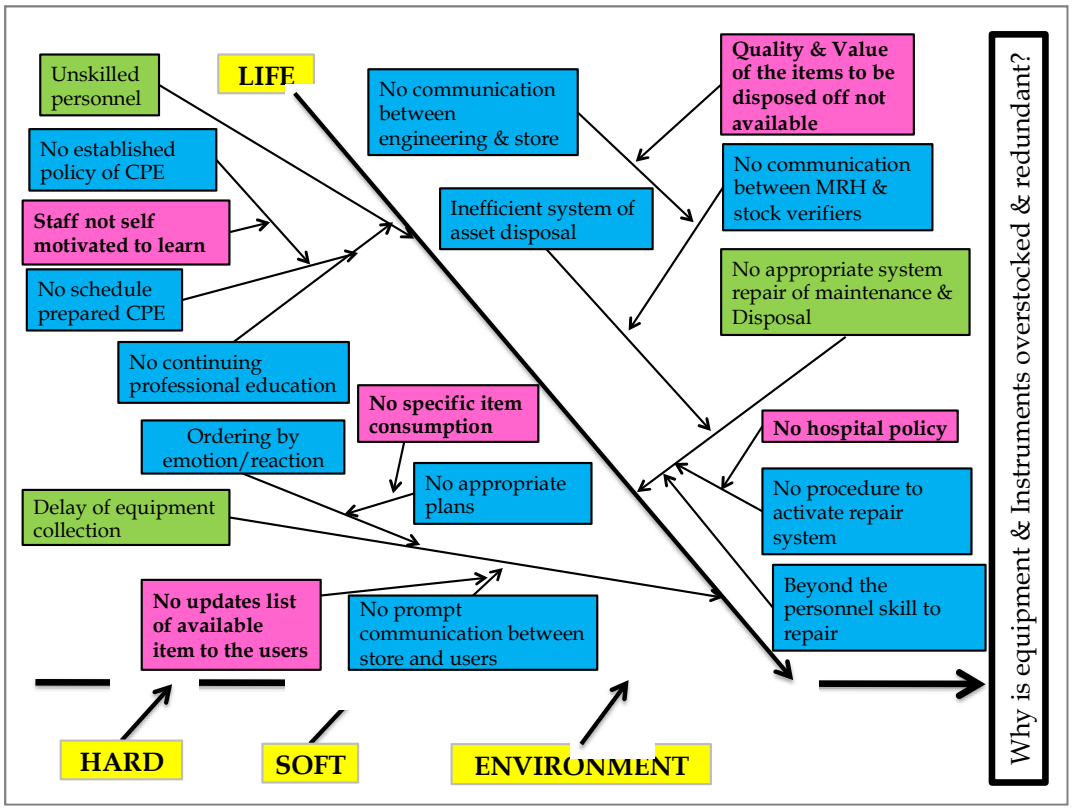


Figure 2: Fishbone analysis (Life)

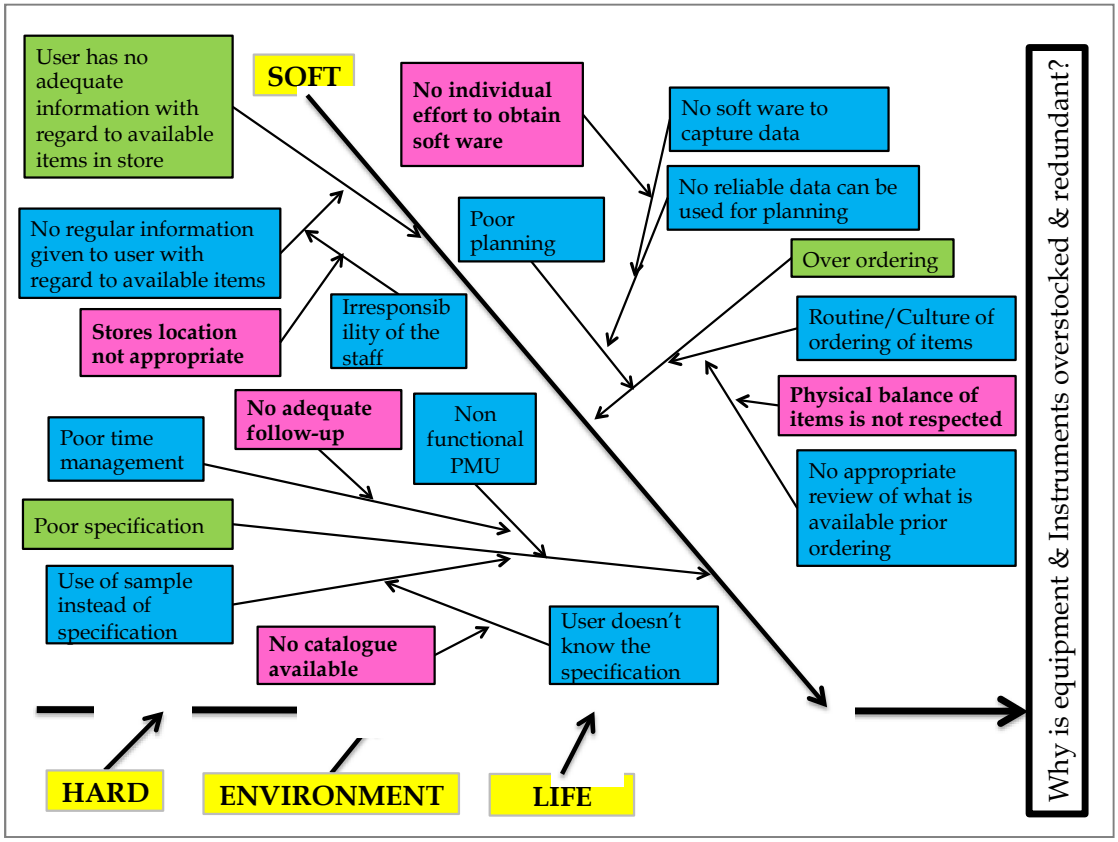


Figure 3: Fishbone analysis (Soft)

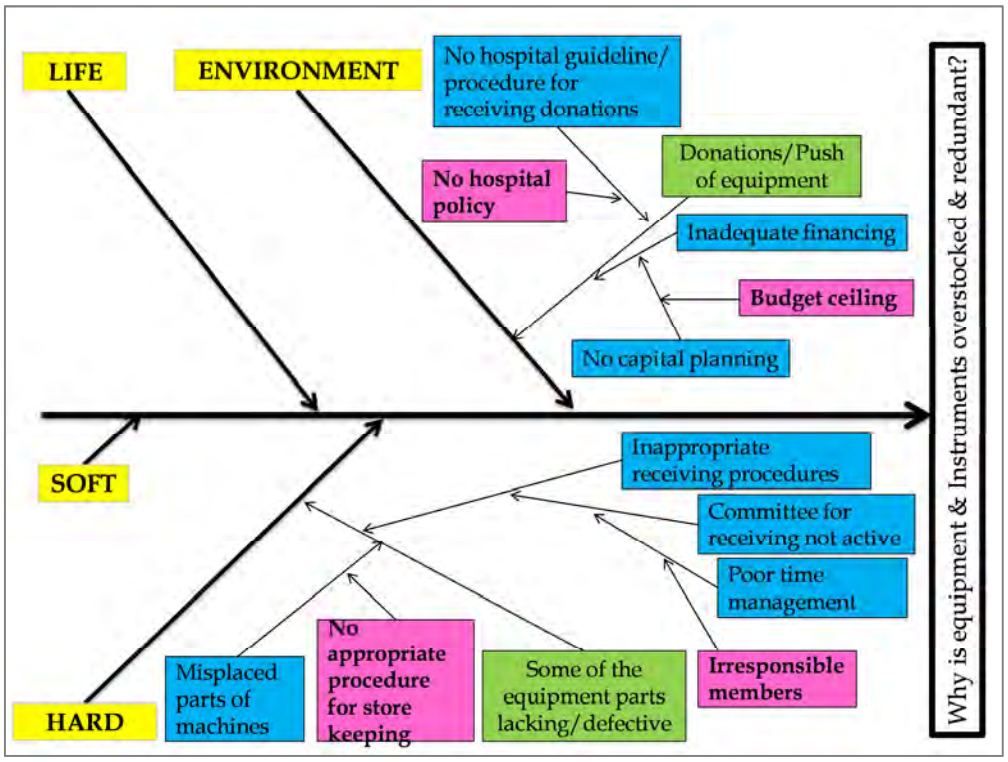
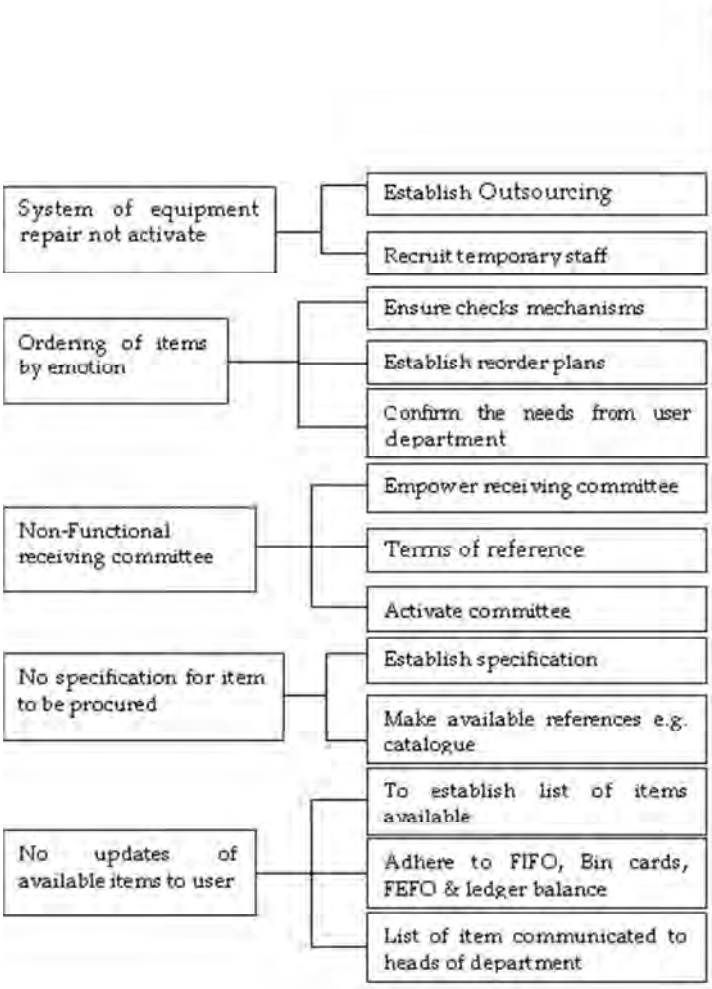


Figure 4: Fishbone analysis (Hard and Environment)

Step 4: Identification of Countermeasures

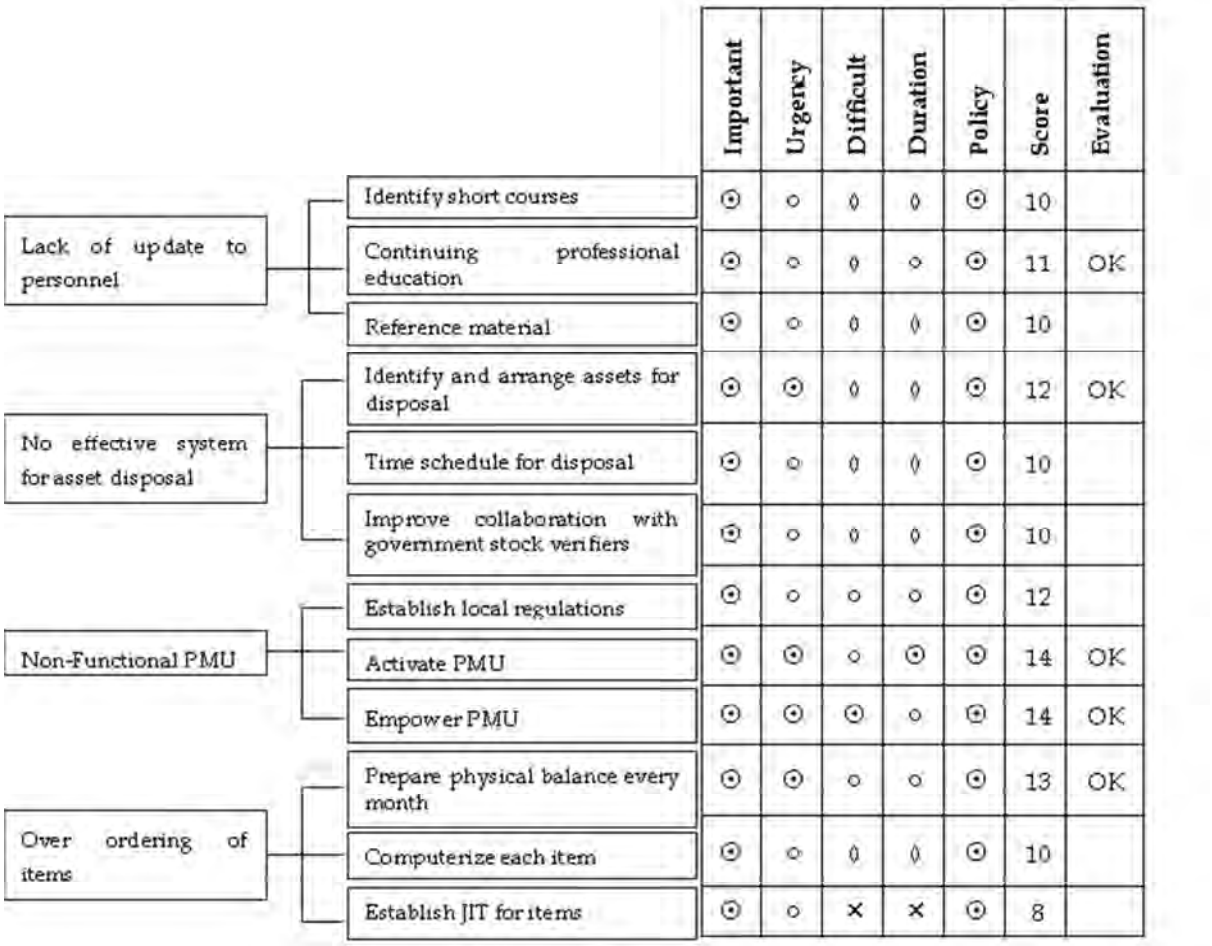
In this step, KAIZEN team developed a tree diagram to identify countermeasures for solving root-causes identified in the step3. A lot of countermeasures were identified according to the root-causes, and feasibility of each countermeasure was evaluated and scored by criteria that were "Importance", "Urgency", "Difficulty", "Duration" and "Policy" by using the matrix diagram.



	Important	Urgency	Difficult	Duration	Policy	Score	Evaluation
Establish Outsourcing	⊙	○	◊	◊	◊	8	
Recruit temporary staff	⊙	○	○	○	◊	10	OK
Ensure checks mechanisms	⊙	⊙	⊙	○	⊙	14	OK
Establish reorder plans	⊙	⊙	◊	◊	⊙	11	OK
Confirm the needs from user department	⊙	⊙	⊙	○	⊙	14	OK
Empower receiving committee	⊙	⊙	○	○	⊙	13	OK
Terms of reference	⊙	⊙	◊	◊	⊙	11	OK
Activate committee	⊙	⊙	○	○	⊙	13	OK
Establish specification	⊙	⊙	◊	×	⊙	10	
Make available references e.g. catalogue	⊙	⊙	◊	◊	⊙	11	OK
To establish list of items available	⊙	⊙	⊙	○	⊙	14	OK
Adhere to FIFO, Bin cards, FEFO & ledger balance	⊙	⊙	○	○	⊙	13	OK
List of item communicated to heads of department	⊙	⊙	⊙	○	⊙	14	OK

⊙ (3 points) = high priority or easy to do ○ (2 points) = moderate
◊ (1 point) = low priority or not easy to do × (0 point) = very difficult to do.

Figure 5: Tree diagram (left) and matrix diagram (right) - 1



		Important	Urgency	Difficult	Duration	Policy	Score	Evaluation
Lack of update to personnel	Identify short courses	⊙	○	◊	◊	⊙	10	
	Continuing professional education	⊙	○	◊	○	⊙	11	OK
	Reference material	⊙	○	◊	◊	⊙	10	
No effective system for asset disposal	Identify and arrange assets for disposal	⊙	⊙	◊	◊	⊙	12	OK
	Time schedule for disposal	⊙	○	◊	◊	⊙	10	
	Improve collaboration with government stock verifiers	⊙	○	◊	◊	⊙	10	
Non-Functional PMU	Establish local regulations	⊙	○	○	○	⊙	12	
	Activate PMU	⊙	⊙	○	⊙	⊙	14	OK
	Empower PMU	⊙	⊙	⊙	○	⊙	14	OK
Over ordering of items	Prepare physical balance every month	⊙	⊙	○	○	⊙	13	OK
	Computerize each item	⊙	○	◊	◊	⊙	10	
	Establish JIT for items	⊙	○	×	×	⊙	8	

⊙ (3 points) = high priority or easy to do ○ (2 points) = moderate
◊ (1 point) = low priority or not easy to do × (0 point) = very difficult to do.

Figure 6: Tree diagram (left) and matrix diagram (right) - 2

It was agreed among the KAIZEN team to pick up the ones that obtained total score of 11 and above as feasible countermeasures and the ones that got 10 marks was revisited for selection.

Step 5: Implementation of Identified Countermeasures

In order to take the identified countermeasures in step4, the implementation plan was developed by the KAIZEN team based on "5W1H". There were 19 activities identified to be feasible to solve 10 root causes. The timeframe that the team had set to complete was 6 month.
Table xx: Implementation plan

Table 3: Action Plan

COUNTER MEASURES	WHO	BY WHEN	WHERE	WHY	WHAT	HOW
Request for recruitment of temporary staff	SO I/C	June 2012	Store & administratio n	Equipment up & running	Repair & Maintenance	Quotation
Ensure the check mechanism	Procurement Officer	Sept 2011	Central store	To ensure correct quantities are ordered	Established check mechanisms	Develop
Confirm needs from user departments	Procurement Officer	Aug 2011	Central store	Control stock	Established checks	Develop
Establish order plans	Procurement officers	Sept 2011	Central Store	To control ordering	Established order plans	Develop
Train the receiving committee	Procurement officers	October 2011	Entire hospital	To give them knowledge to make them active to perform duties	Training	On job training
Activate committee	Procurement officers	Sept 2011	Entire hospital	Improve receiving of material	Active committee	Schedules/remi nder
Make available references e.g. Catalogue	Procurement officers	Sept 2011	Entire hospital	To get clear specifications	Specificatio n in place	Develop
Establish list of items available.	Storekeepers	Aug 2011	Central stores	To update users	List of items in place	Develop
List of items to be communicated to head of department	Storekeeper	Aug 2011	Central stores	To make item available to user	List of items in place	Develop
Adhere to FIFO, Bin Cards, Stock Control cards, FEFO e Leger balance	Storekeepers	Sept 2011	Central stores	Use material in time	Bin cards in place	Prepare cards
Continue professional education	Head of department	October 2011	Central store	To update with current issues	Courses/sess ion conducted	Identify courses
Identify and arrange assets for disposal	Head of department	June 2011	Central store	To simplify the process	Arrange asset for dispersal	Stock taking
Develop time schedule for disposal	Head of department	May 2011	Central store	To get reasonable time for disposal	Prepared schedule	Prepare
Improve collaboration with government stock verifies	Head of department	May 2011	Central store	To get effective system for assets disposal	To dispose items timely	Lobbying improvement of relations
Establish local regulations/SOP	Head of department	October 2011	Entire hospital	Improve procurement	SOP in place	Develop

COUNTER MEASURES	WHO	BY WHEN	WHERE	WHY	WHAT	HOW
Activate PMU	Head of department	October 2011	Entire hospital	Improve procurement	Improved procurement	Regular meeting
Empowered PMU by training them	Head of department	Sept 2011	Entire hospital	Improve procurement	Trained PMU	Conduct training
Prepare physical balance every month	Storekeepers .	June 2011	Central store	To get actual stock balances.	Stock balance sheet	Practice

Step 6. Check effectiveness of the Countermeasures

To verify the effectiveness of the countermeasures taken, the same tool as step 2, which was Pareto chart, was used. The KAIZEN team identified the frequency occurrence in the same way of step 2, and "reduction of the frequency" and "reduction rate" were calculated accordingly. The table xx shows the differences in frequency before and after KAIZEN and reduction rate (%). By using the figures, the Pareto chart was created to make the differences visible, as illustrated in the diagram xx.

Table 4: Differences before and After KAIZEN

SN	Observed type of stock	Pre		Post		Reduction	
		Frequency	C.f.%	Frequency	C.f.%	Frequency	Rate %
1	Equipment / Instrument	32	51.6	22	56.4	10	31.3
2	Medical supply	13	72.6	8	76.9	5	38.5
3	Stationery	8	85.5	6	92.3	2	25
4	Cleaning material	5	93.5	3	100	2	40
5	Medicine	4	100	0	100	4	100
	Total	62	-	39	-	23	**37.1**

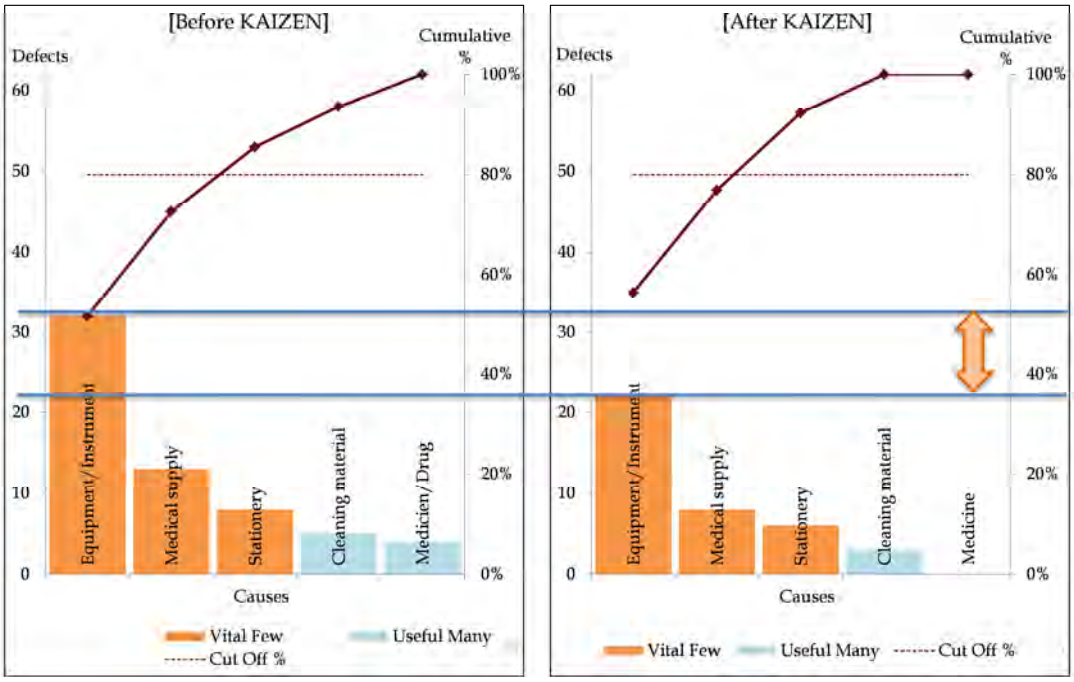


Figure 7: Pareto chart before and after KAIZEN

The target was to reduce frequency of the 3 top causes by 40%; however, the actual reduction rate was 37.1% as the table xx indicates. Therefore, it was concluded that the countermeasures taken were not effective enough to achieve the target.

Though the target was not attained, there were remarkable tangible effects observed as a result of KAIZEN activity. The amount of overstock and redundant stock curtailed through KAIZEN activity corresponded to 11 million Tanzania Shillings (equivalent to 6,900 US dollars). Also, overstock and redundant stock of "medicine/drugs" became zero; it means that the frequency reduced was 100%.

Step 7. Standardizations of Effective Measures *(Hadome)*

After the effectiveness of the implemented countermeasures was assessed, the Central Store management picked up the effective countermeasures and developed an action plan and checklist to sustain these effective measures. Effective measures have been practiced regularly and sustainability of their activities has been confirmed through biannual external evaluation of KAIZEN practice.

VII-5-2…A good example of KAIZEN at the Medical Records

This is other example of KAIZEN case at Mbeya Consultant Hospital. This KAIZEN activity was implemented at Medical Record department, and the abstract of presentation on it was directly cited here with permission.

Mr. David Njalali
Mbeya Referral Hospital, United Republic of Tanzania

Step1: Theme Selection

"Delay of patients at the Medical Record Reception"
The delay of clients at Medical Records Reception is clearly illustrated with the evidence of long queues, clients' dissatisfaction/complaints, bypass of staff and relatives, medical recorder staff unsatisfied with their own performance and other hospital staff complaining of the medical record performance.

Medical record staff thinks that the main problem they have first is the delay of the patients at the reception, secondly is bypass of other hospital staff and relatives to seek medical record services and thirdly is that they have many paper work in there department. The main problem that can be solved by the department is selected based on the outcome/impact on the solution, urgency, realization and availability of the resources on the process of solving the problem.

Table 1: Theme selection table

S/No	Possible	Impact	urgency	Realization	Resource	Score
1	Patients delay at the Medical Record Reception area	⊙	⊙	⊙	○	11
2	Bypass by both medical staff and relatives	○	○	×	○	6
3	Too many paper work in the department	◊	◊	◊	◊	4

Note: ⊙ = 3Pts, ○ = 2Pts, ◊ = 1Pt, × = 0Pt

Step2: Situational analysis

Medical Records and Reception department in the Mbeya Consultant Hospital receive the clients of outpatients and inpatients. In these two categories of patients some patients are for IPPM, NHIF and those patients paying cash. The patients flow is as follows; first the patient is given a queue number and then to cashier where he/she pay for the registration and thereafter registered and finally given a file to go for the specified clinic.

Medical record department is staffed with 6 medical recorders and 5 Medical recorder attendants serving an average of 350 in every official working day. About 102 patients are newly registered patients, 246 are the return patients and 30 patients for admission. Among the services served by the medical records department include daily reception, out & in-patient census, CTC activities, coding & classification of diseases, shift work, cross check files from in & out patients. Every day there is one staff on off duty.

Although most of the staff reports at workplace between 07.30am and 08.10am they commonly start to serve patient around 08.30am and 8.40am. This is because of departmental meetings which are

conducted every morning followed by medical staff serving themselves with tea. By the time workers start to serve the patient there are long queues at the point of delivering service of NHIF, Clinic, Marking, Mini pharmacy and the account section. An average of 43 patients is in queues at the time of beginning work.

The medical staff and other people are not interested to lineup in queues. They sought the alternative of bypass and queues behind the medical recorders in the office. About 20 medical staff bypasses the queues to be promptly served.

According to establishment the medical record department requires a total number of 18 health worker. Currently there are 11 health workers who are also not satisfied with the present situation particularly of long queues and bypass. Since the department started to implement 5S→CQI→TQM program in August 2007 the complaint of client has decrease to average of 5 patients in a week. Most of the complaints are of the patients who failed to get service in the clinics because of their files missing in their respective clinics or in medical records. This may sometimes lead to open the temporary files for the patients to be able attended in the clinics.

From the ward and outpatient clinics there is an average of 6 medical staffs coming to medical records looking for the patient files and forms which are not available in the wards or in clinics and this indeed interrupt the work of medical recorders. The other interruption is when the medical recorders take their relatives to clinics, wards or to visit the sick relative in the wards

Tuesdays and Thursdays there is high number of patients disproportionately with other days of the week. This result from the way the clinics are scheduled and the way appointment are given by the departments. The number of patient normally grows fast at the reception between 07.30 and 11.00am with minimal time interval. The patient at reception starts to decongest significantly from 1230hrs to 1330hrs. According to the survey done in hospital the total average waiting time at medical record reception is about 74minutes

Most of the data were collected through observation, group discussion and available record medical record department over the period of two week March 2011

Pareto Chart analysis

Table 2: Table of summary

Number	Observed problems	Number of people	Cf.	Cf %
1	Patients delayed	43	43	50.6
2	Staff bypass	20	63	74.1
3	Unmotivated Recorders	11	74	87.1
4	Missing files	6	80	94.1
5	Patients without Card	5	85	100

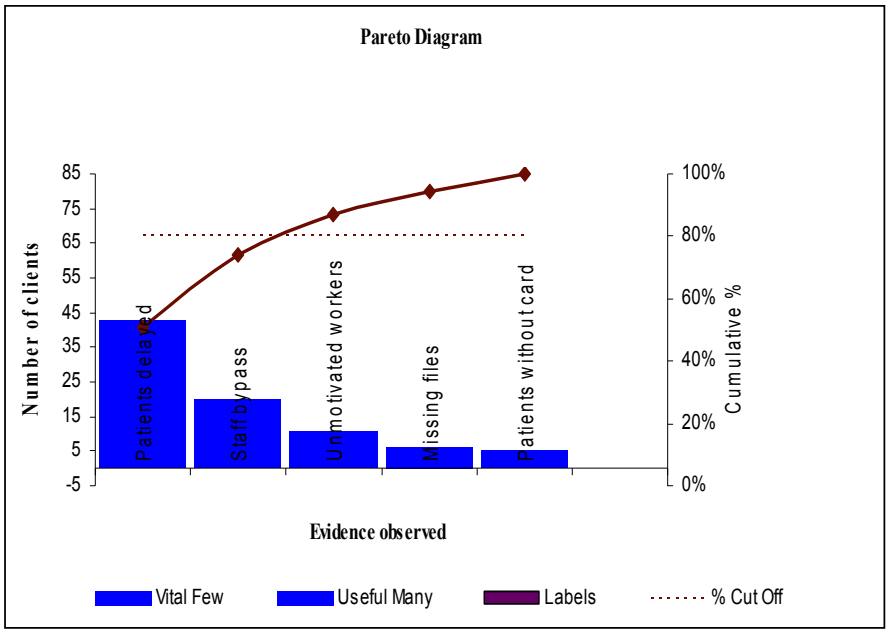


Figure 1: Pareto Diagram analysis
(Cut off point; 80%: The target is to reduce the problem by 40%)

From the Poreto chart point of view the Medical record KAIZEN team will work on the issue of Patients delayed and staff bypass.

Step3: Root cause analysis

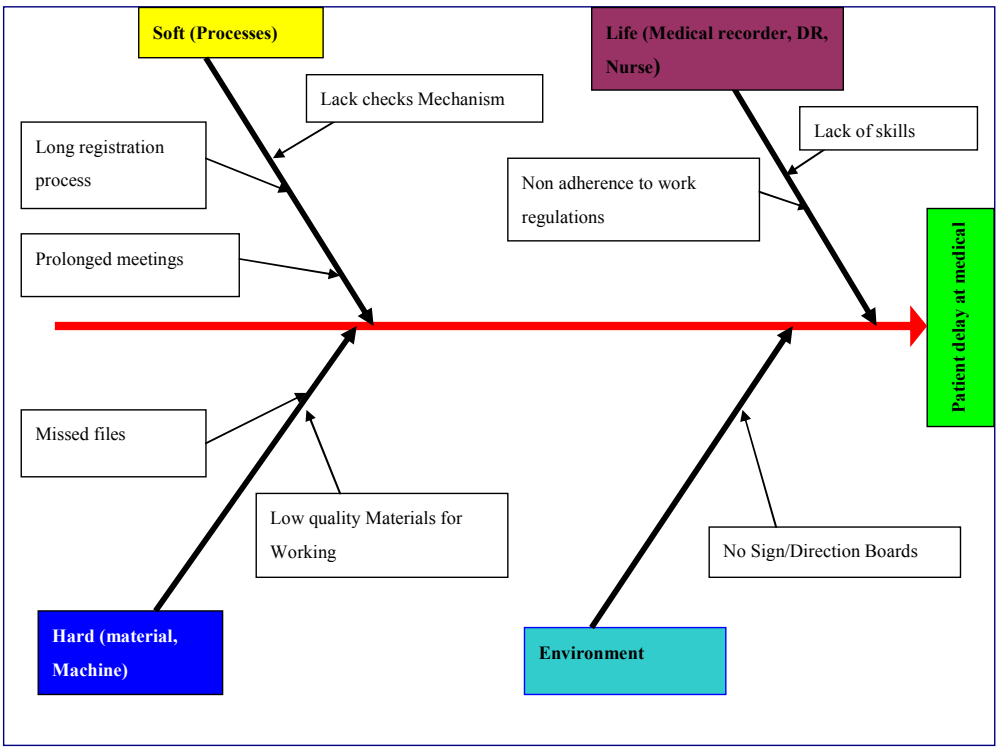


Figure 2: Fishbone Chart 1

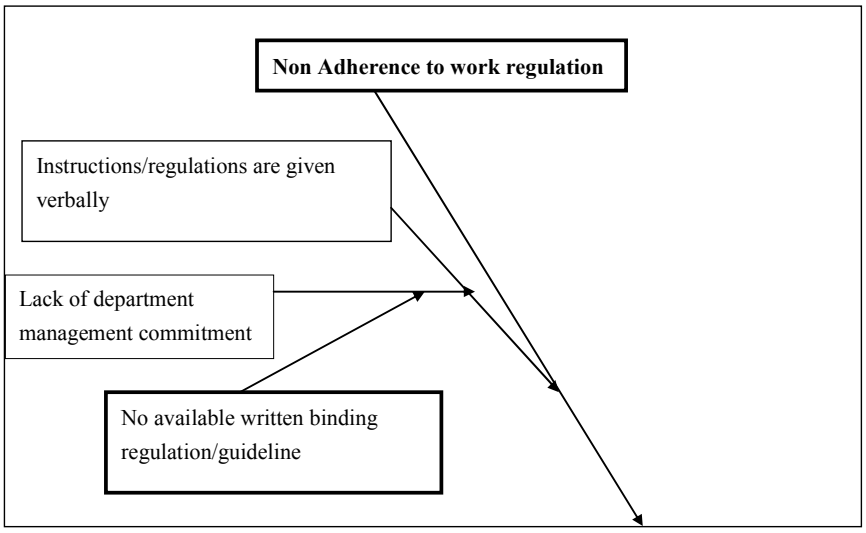


Figure 3: Fishbone Chart 2

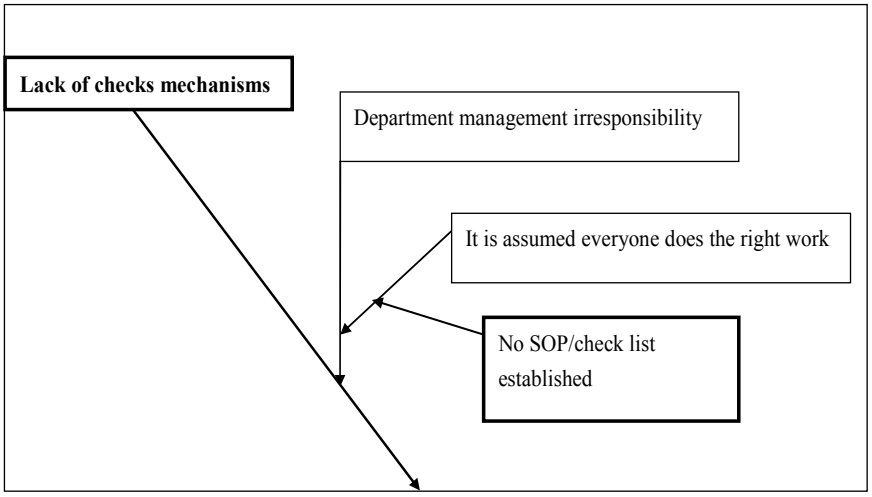


Figure 4: Fishbone Chart 3

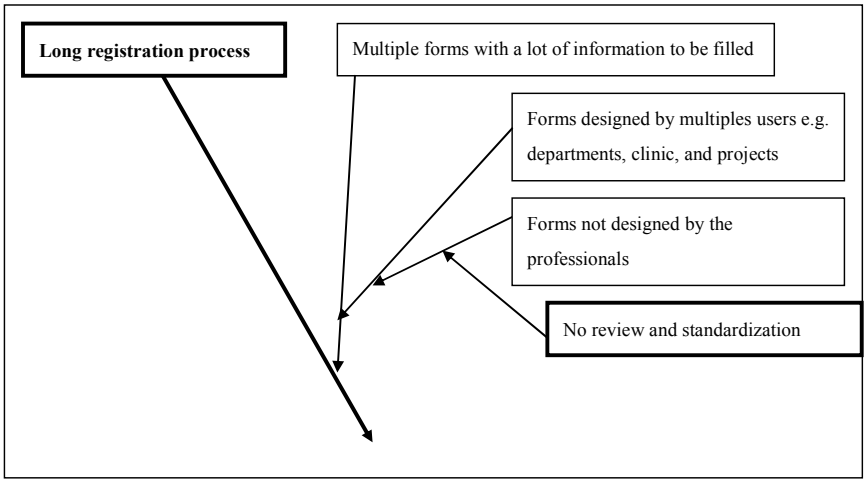


Figure 5: Fishbone Chart 4

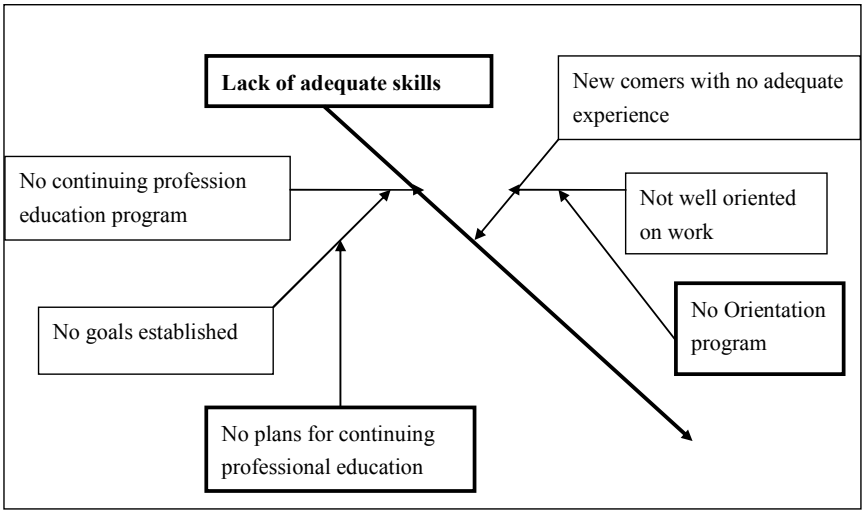


Figure 6: Fishbone Chart 5

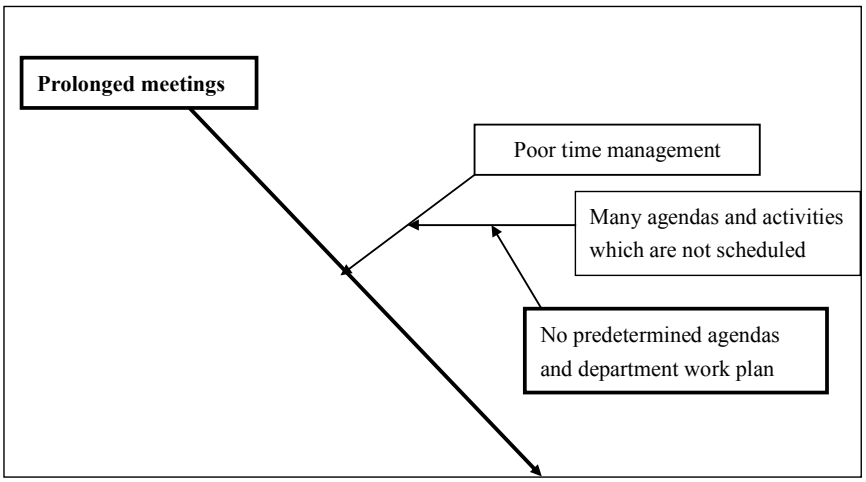


Figure 7: Fishbone Chart 6

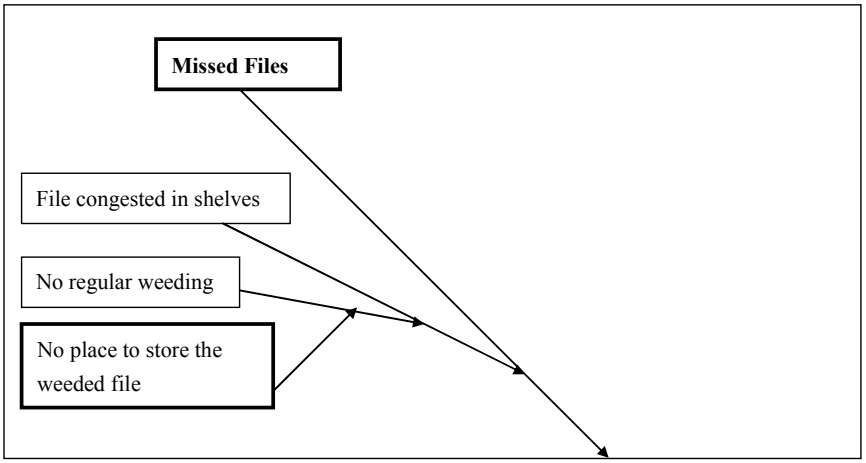


Figure 8: Fishbone Chart 7

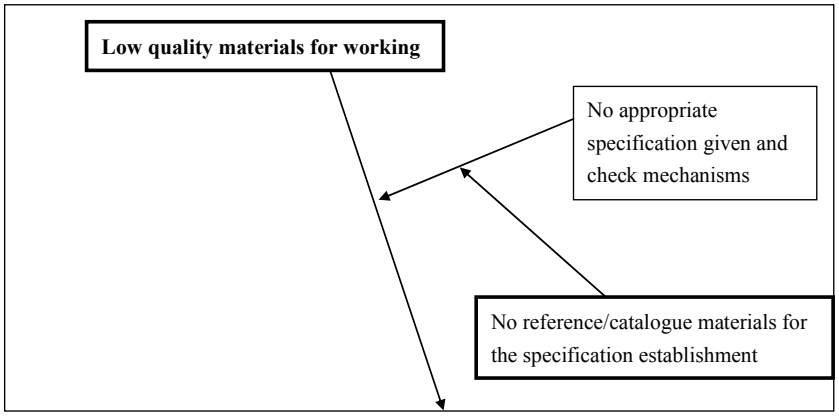


Figure 9: Fishbone Chart 8

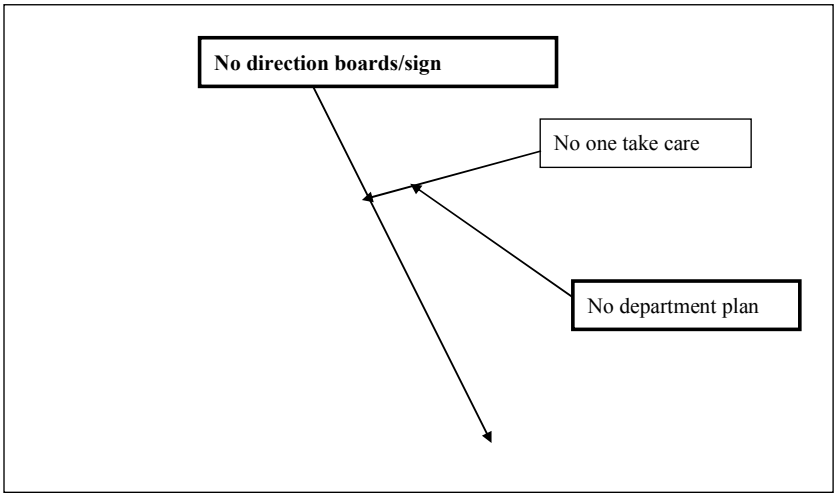
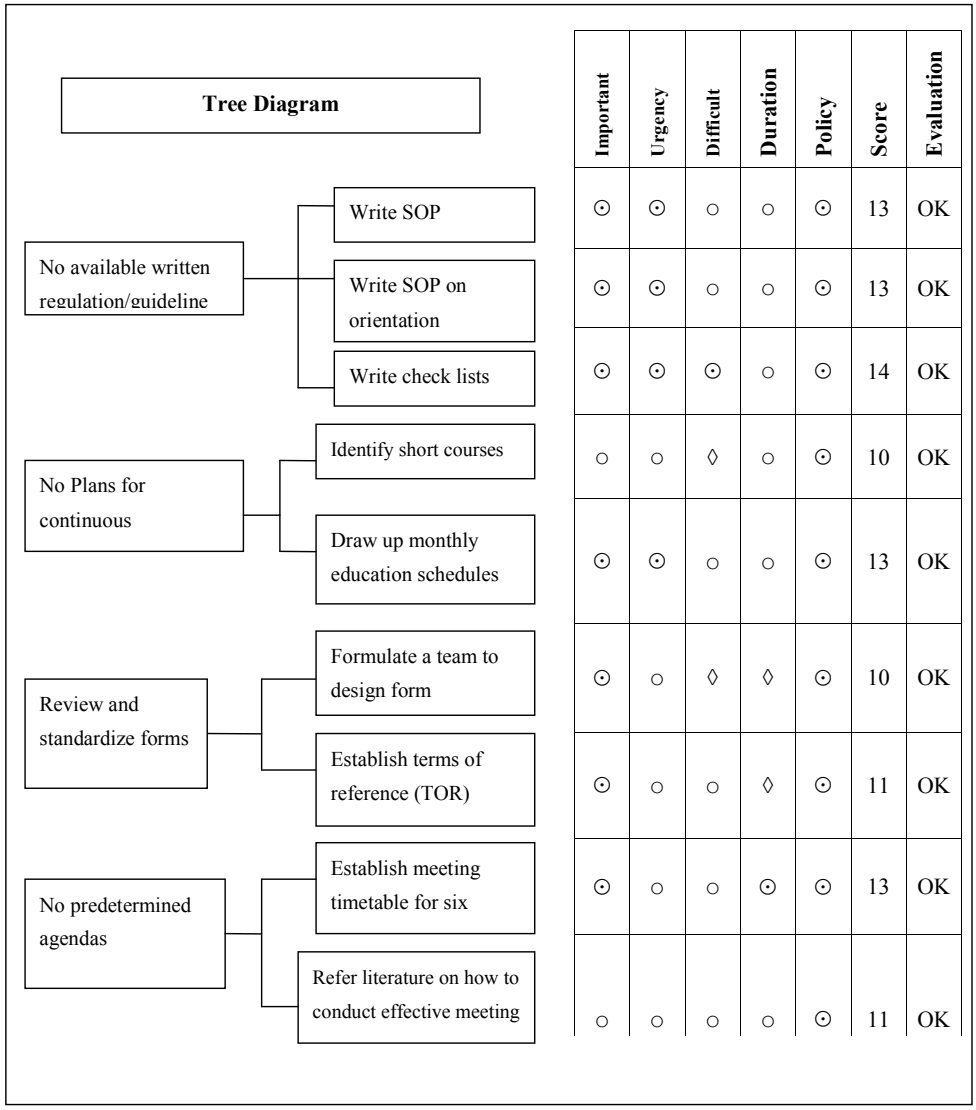


Figure 10: Fishbone Chart 9

Root causes
No available written regulation/guideline
No Orientation program for new personnel
No plan for continuous professional education
No review and standardization of forms
No SOPs and check list established
No predetermined agenda and departmental work plan
No place to store weeded files
No reference/catalogue material for specification establishment
No department plan for the direction/sign boards

Figure 11: Root Causes

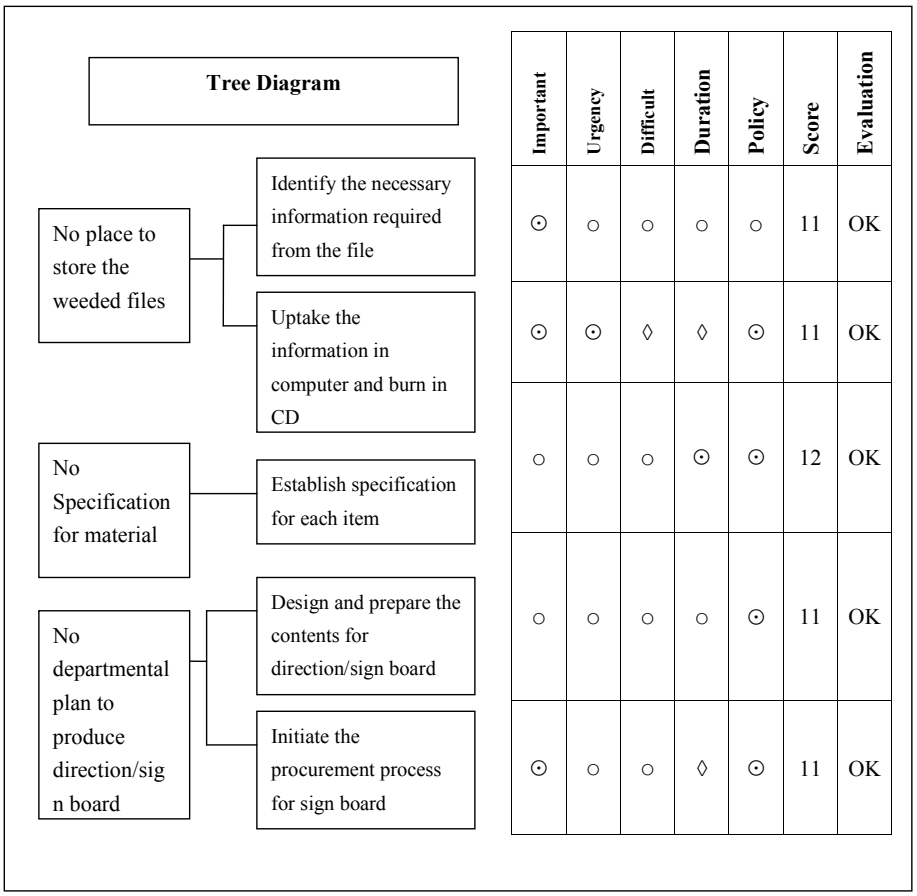
Step4: Identify countermeasures (Matrix and Tree diagram)



Important	Urgency	Difficult	Duration	Policy	Score	Evaluation
⊙	⊙	○	○	⊙	13	OK
⊙	⊙	○	○	⊙	13	OK
⊙	⊙	⊙	○	⊙	14	OK
○	○	◊	○	⊙	10	OK
⊙	⊙	○	○	⊙	13	OK
⊙	○	◊	◊	⊙	10	OK
⊙	○	○	◊	⊙	11	OK
⊙	○	○	⊙	⊙	13	OK
○	○	○	○	⊙	11	OK

Note: ⊙ = 3Pts, ○ = 2Pts, ◊ = 1Pt, ✕ = 0Pt

Figure 12: Tree Diagram 1



Important	Urgency	Difficult	Duration	Policy	Score	Evaluation
⊙	○	○	○	○	11	OK
⊙	⊙	◊	◊	⊙	11	OK
○	○	○	⊙	⊙	12	OK
○	○	○	○	⊙	11	OK
⊙	○	○	◊	⊙	11	OK

Note: ⊙ = 3Pts, ○ = 2Pts, ◊ = 1Pt, × = 0Pt

Figure 13: Tree Diagram 2

Step5: Implementation Plan

Table 3: 5W1H Table1

COUNTER MEASURES	WHO	BY WHEN	WHERE	WHY	WHAT	HOW
Write SOP	HOD	July 2011	MRD	To Ensure follow SOP activities	SOP	Develop SOP
Write SOP on Orientation	HOD & HRT	August 2011	MRD	To Ensure orientation of SOP are implemented	SOP	Orientate
Write Check list	HOD & HRT	June 2011	MRD	Staff fall Instruction	Check list	On written
Identify short courses	HOR	Sept. 2011	MRD	To ensure all staffs are trained	Short test	Intensify
Draw up monthly education schedules	HOD & HRT	August 2011	MRD	To ensure all staff are been trained	Schedule	Draw
Formulate a team to Design form	HOD & HRT	Sept. 2011	MRD	T o ensure forms are standard (quality)	Form	Formulation
Establish term of Reference	HOD	July 2011	MRD	To ensure quality of form	Form	Establish
Establish meeting time table for six month	HOD & HRT	July 2011	MRD	To reduce wasting time	Meeting	Establish
Refer literature on how to conduct effective meeting	HOD	July 2011	MRD	To ensure literature on how to conduct meeting	Control meeting time	Reference
Identify the necessary information required from the files	HOD & HRT	August 2011	MRD	Reduce congestion unnecessary	From the files of patient	Identify
Uptake the information in computer and burn in CD	HOD & HRT	June 2011	MRD	To reduce congestion of files	CD Rooms	Uptake
Establish specification for each items	HOD & HRT	August 2011	MRD	To reduce shortage of items	Catalogue	Establish
Design and prepare the contents for direction sign board	HRT	July 2011	MRD	To ensure the client appropriate area	Direction	Design
Initiate the procurement process for sign board	HOD	August 2011	MRD	To ensure procurement process	Computer	Initiate

Target; the problem of patient delayed reduced by 40%
Time frame; Six month from March 2011

Step6: Check effectiveness of the counter measures

Implementation of the counter measures is for six month. The tools used to evaluate the effectiveness of counter measures Number, Graphs and Pareto chart. The tool that easy to make comparison between before and after KAIZEIN is Pareto chart.

Table 4: Different before KAIZEN and after KAIZEN

Number	Observed problems	Frequency before KAIZEN	Frequency after KAIZEN	Reduction frequency	Reduction rate
1	Patients delayed	43	34	9	20.9%
2	Staff bypass	20	12	8	40%
3	Unmotivated Recorders	11	8	3	27.3%.
4	Missing files	6	2	4	33.3%
5	Patients without card	5	2	3	60%
	Total/average	85	58	27	31.8%

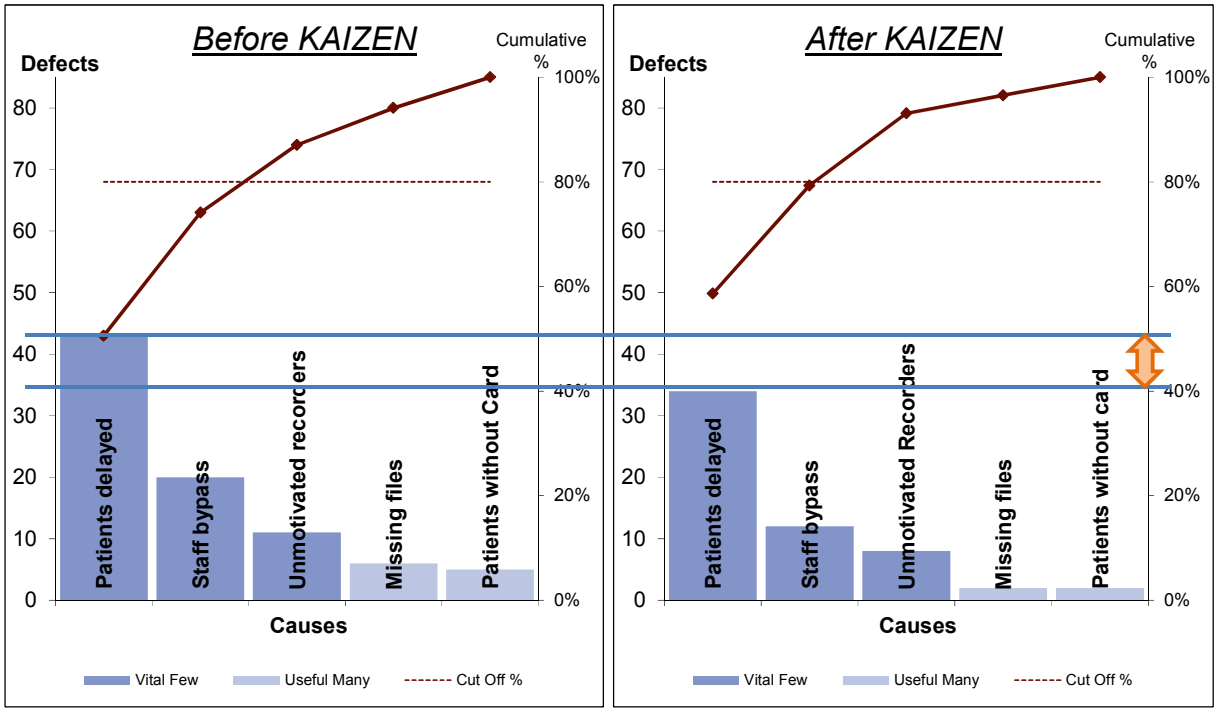


Figure 14: Pareto Diagram before KAIZEN and after Kaizen

The target set was to frequency reduced by 40% from the current situation. In this case as you can see in the table the reduction rate was 31.8% which means that the counter measures were not very effective. This may be the chosen KAIZEN activity was big in which it needs more time to have big tangible positive results.

Step7: Standardization of Counter measures

Table 5: 5W1H Table 2

WHY	WHO	WHEN	WHERE	WHAT	HOW
To write SOP	In charge of medical records department	After Two month	Medical record Department	Written SOP	Continuously Practise
To write Check list	In charge of medical records department	Monthly	Medical record Department	Written Check list	Continuously Practise
To establish meeting time table for six monthly	Assistant head of department	Monthly	Medical record Department	Time Table	Continuously Practise
Design and prepare the contents for direction sign board	In charge of medical records department	After two month	Medical record Department	Direction sign Board	Review

Table 6: Check Sheet

Date	Checked by	Standardized Measure	Implementation Status	
		To write SOP	Sustained Not sustained	Following STD Not following STD
		To write Check list	Sustained Not sustained	Following STD Not following STD
		To establish meeting time table for six monthly	Sustained Not sustained	Following STD Not following STD
		Design and prepare the contents for direction sign board	Sustained Not sustained	Following STD Not following STD

VII-6…Case of KAIZEN in Aso Iizuka Hospital, Japan at annual TQM competition in 1993 (Reference for Chapter III)

The presented case is an actual presentation case at corporate annual meeting on TQM, which has been held with participation of hospital employees representing each section and work units of the hospital. The meeting is run by TQM office of the hospital under the presence of C.E.O and other top management group. The extended abstract of the presentation was directly cited here with permission of the authors.

Authors: Hiromi Ando, Teruko Nishimoto, Reiko Higuchi,
Youko Dousaki and Mitsue Nakashima
Aso Iizuka Hospital (AIH), Iizuka, Fukuoka Prefecture, Japan

1. Goal-setting **Reduction of damaged medicine**

2. Problem Identification (Overview of the constraints)

Plenty of damaged pharmaceuticals were found as a dead stock at Patient Ward A in AIH due to inspection conducted by Pharmacy and material Control Department of AIH. Personnel of the Ward A formulated a QC Circle for improving the mentioned unfavorable situation on stored drugs and prevent future catastrophes in management both for ward administration and quality of care.

3. Actual Situation with constraints

Survey was conducted for a month specifically on the situation of damaged medicines stored at Ward A. It was clarified that over 80% of the damaged items were predominantly pharmaceuticals for injection use. (Figure 1)

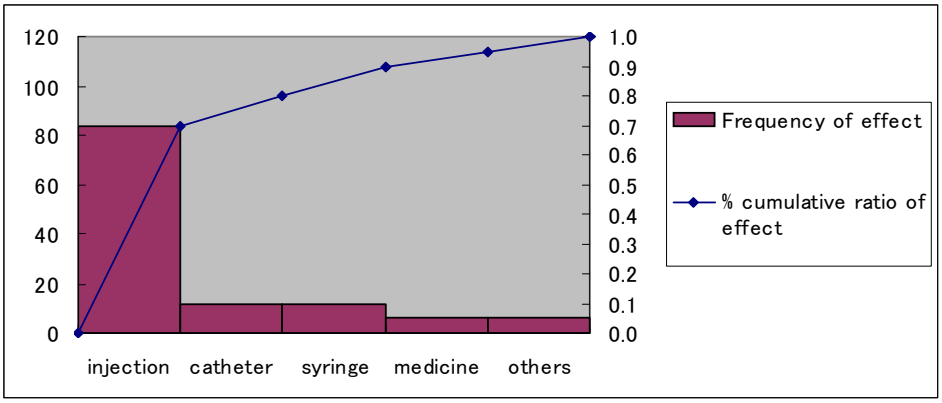


Figure 1 Pareto Chart: Damaged medicine before Kaizen in ward A.

According to this survey result, as shown above, the stock of drugs for injection use was selected the target of KAIZEN, namely reduction of the volume. The work process related to this matter was, thereafter, assessed by the team after establishing mutual understanding among team members on the objective and work flow of KAIZEN. The standard procedure of prescribing medicines for injection use was, then, found to be complicated to have several layers and steps.

The process starts with decision-making of doctor-in-charge of a specific patient. He or she prescribes an injection-use drug for the patient by writing an instruction form, which has 4 sets of carbon copies. The written instruction goes to 4 different locations. The first copy goes to accounting department for cost calculation purpose. The second one is sent to individual clinical chart file of the patient for

recording purpose. The third one is, then, handed over to the nursing officer in charge and the last one is finally sent to the indoor pharmacy to prepare injections. Although the above is a standard process, some doctors were found failed to write up the prescription form and, instead, just simply write a notice of prescription only in the patient record. This irregularity was found to be a mistake-inducer particularly of nursing staff in transcribing the doctors' written instruction from the patient record to the prescription form.

4. Analysis of causes

Brain-storming is used to analyze causes, why drugs for injection use, stored in the ward, were easily to be damaged. This Problem analysis shown in Figure-2 and 3 successfully indicated four different views, composed by;

-People (Doctors, Nurse, and patients),
-Software (Documents, records),
-Hardware (Infrastructure, equipment), and
-Work environment.

There are various problems behind the core problem, which was taken up as KAIZEN topic with prioritization for solution. Those problems are all interconnected each other with cause-effects relationship. The following Chart 1 described the problem statements, which were taken up in the brain-storming done by the job group. Thirteen identified problems are representation of the complexity of the situation.

Table 1: Causes for the effect of damaged injection

Causes	7. Similar name of injections
1. No exclusive shelf for injection	8. Use of medical abbreviations
2. No use of the exclusive tray	9. False matching of injection to patient
3. No box exclusive for depository of cards	10. No exclusive arrangement for injections
4. Too busy to check	11. Unnecessary materials occupying the space
5. Job interruption by patient’s call	12. No obedience to standard work
6. Difficult to see the expression of card	13. Poor management of inventory

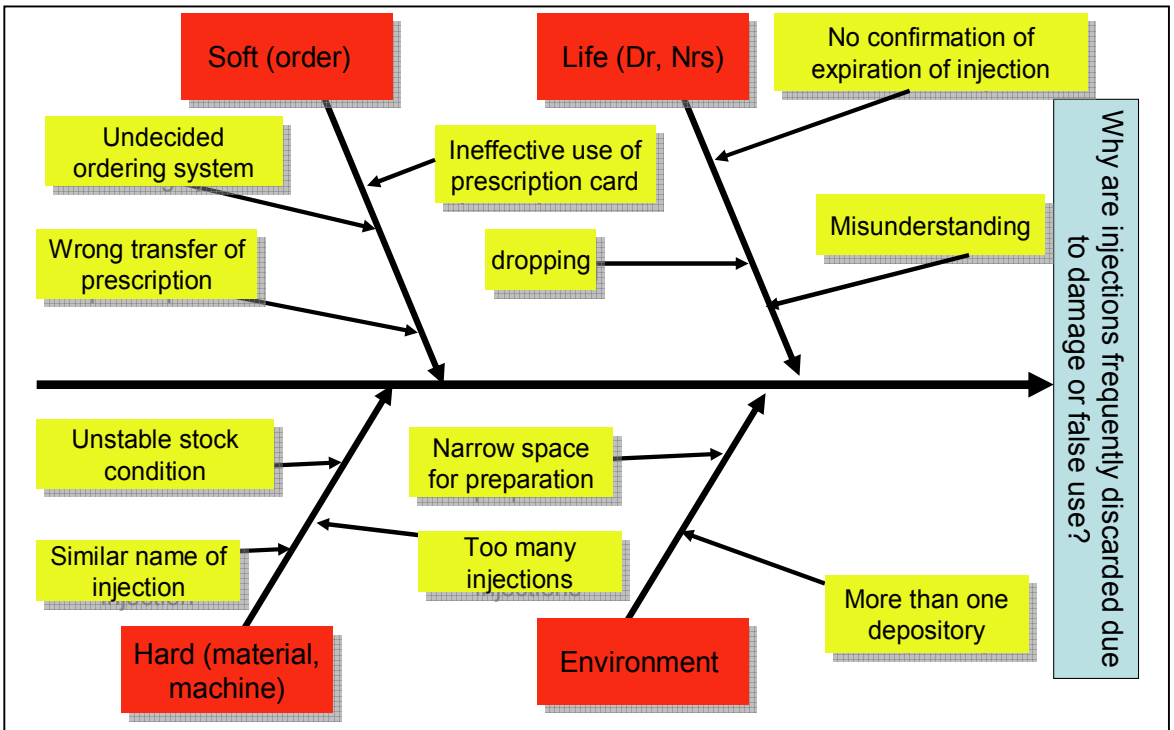


Figure 2: Fish bone analysis;
The first step of searching root causes of the effect presented as damages of injection-use drugs. The areas related to the existing causes of the above "Effect" were analyzed using MSHEL (Management, Soft, Hard, Environment and Life) analysis.

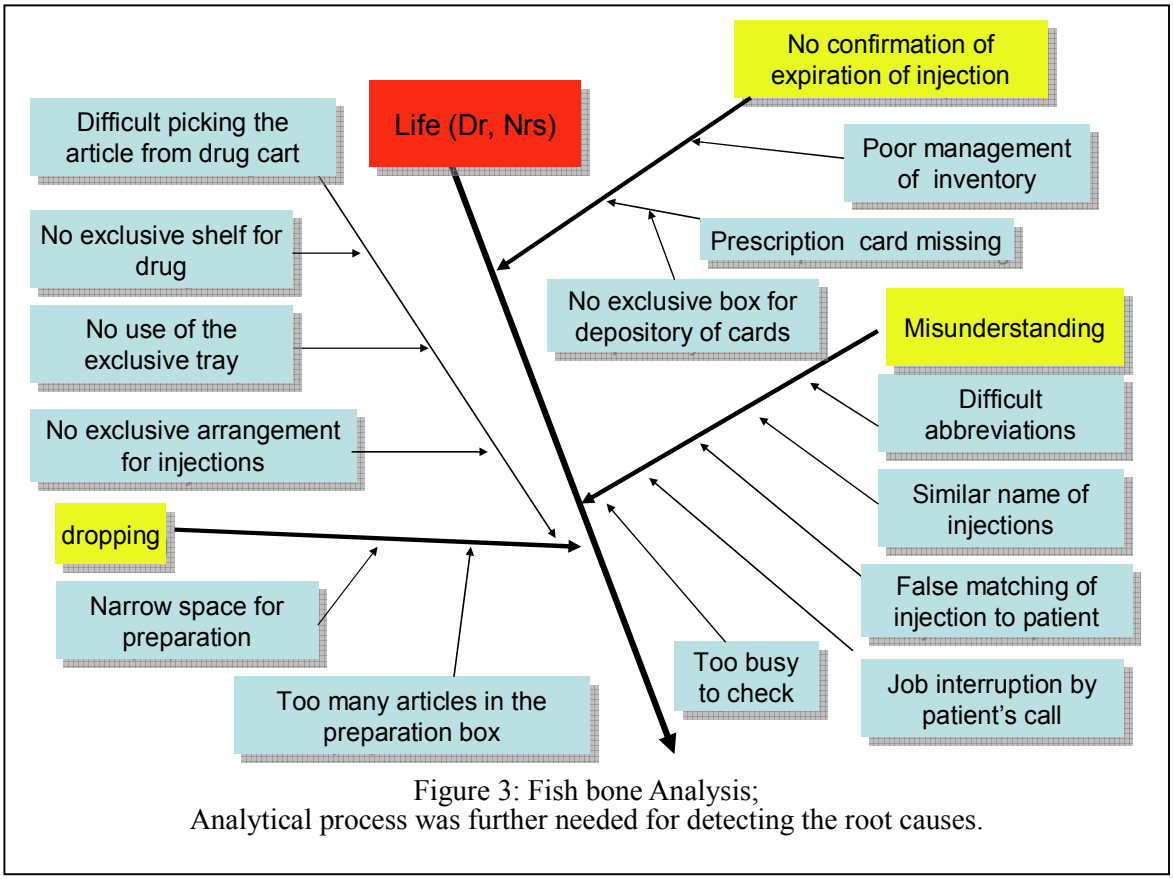


Figure 3: Fish bone Analysis;
Analytical process was further needed for detecting the root causes.

5. Plan and implement countermeasures

In order to prevent these 13 issue (Damaged injection medicine), Figure-4, 5 indicates designing measures from causes. As a result of Chart-2 shows 14 action plans.

Countermeasures were formulated based on the results of fish bone analysis, which was presented above. The detected 13 problems are expected to be solved by 12 countermeasures summarized in Table 2.

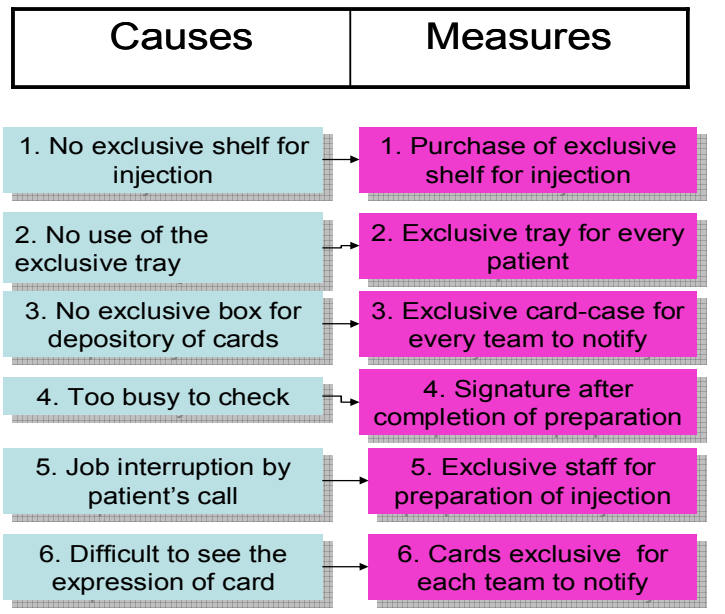
Table 2: Measures applied for implementation for Kaizen

Measures	7. Red underline to alarm similar injection
1. Purchase of exclusive shelf for injection	8. Glossary for terminology
2. Exclusive tray for every patient	9. Room number and patient name on the bottle
3. Exclusive card-case for every team to notify	10. Seiton (Arrangement)
4. Signature after completion of preparation	11. Seiri (Adjustment)
5. Exclusive staff for preparation of injection	12. Insertion of expired card in an prescription file
6. Cards exclusive for each team to notify	

Matrix diagram, as shown in Figure 4 and 5, was used for actual plan of operation. The 14 actions are planned and provided for prioritization based on criteria of importance, urgency, difficulty in problem-solving, policy coherence and necessary time-frame for solution. Grading of the countermeasures was, thereafter, carried out in 4 levels on each criterion.

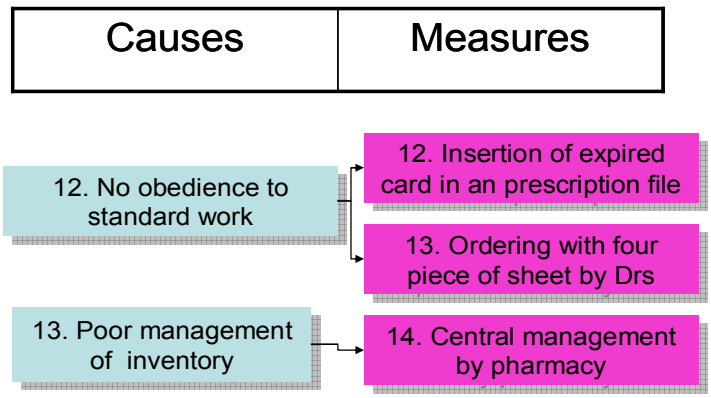
The followings are the listed up countermeasures.

1. Purchase of exclusive shelf for injection-use drugs,
2. Setting Exclusive tray for every patient,
3. Setting Exclusive card-case for every team to notify the use of injection
4. Regularize giving signature by the staff in charge after completion of preparation,
5. Allocating exclusive staff for preparation of injection,
6. Setting a new card system exclusively for each team to notify the injection-use drugs,
7. Regularize placing red underline on every record to alarm the staffs on injection,
8. Defining terms used for drugs and other related actions as glossary,
9. Placing room number and patient name on the injection or infusion bottle,
10. Conducting "Set" step of 5S further,
11. Conducting "Sort" step of 5S further,
12. Inserting the used card of injection-use drugs in prescription files for recording purpose.
13. Conducting drug order only by direct writing prescription form only by doctors,
14. Managing all injection-use drugs only at central pharmacy.



Importance	Urgency	Difficulty	Policy	Duration	Score	Evaluation
◎	◎	△	◎	◎	13	OK
◎	◎	○	◎	◎	14	OK
◎	◎	○	◎	◎	14	OK
◎	◎	◎	◎	◎	15	OK
◎	◎	◎	◎	○	14	OK
◎	◎	◎	◎	◎	15	OK

Figure 4:
Tree diagram (left) was used for designing measures from causes. Matrix diagram (right) was used for selecting and implementing measures.



Importance	Urgency	Difficulty	Policy	Duration	Score	Evaluation
◎	◎	◎	◎	◎	15	OK
◎	△	×	◎	×	7	NO
◎	×	×	◎	×	6	NO

Figure 5:
Two measures (#13 and #14) were not applied by checking with Matrix diagram.

Using the matrix diagram, 9 out of 14 countermeasures was prioritized and further rated according to the above-mentioned criteria. Consequently, the all selected 9 measures are decided to be implemented for the problem-solving.

The selected measures as action plans are, then forwarded to the detailed planning of operation using the concept of 4W1H（Who、What, When、Where、How). The actual operative conditions of each action plan are discussed in details among the job group regarding the sequence of action, responsible post, expected outcome, necessary inputs, and important assumptions.

6. Checking results (Evaluation of the effects of actions)

Pre- and post-KAIZEN situations are compared through monitoring and evaluation activities. The quantitative data was collected on damaged consumables relate to injection-use pharmaceuticals and other materials at the Ward A. Prior to the intervention by KAIZEN the numbers of damaged items are;

-Injection-use drugs: 84
-Catheters 12
-Syringes 06
-Other types of drugs 06

The post-KAIZEN condition was revealed with steep decrease of the numbers, particularly of the injection-use drugs, as follows. (Figure 6)

-Injection-use drugs: 14
-Catheters 05
-Syringes 04
-Other types of drugs 04

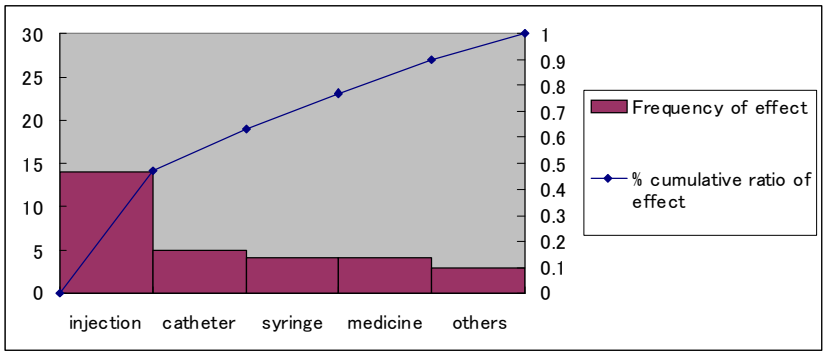


Figure 6:
Pareto chart after implementation of measures; Number of damaged injections were significantly reduced from 84 to 14. At the same time, damages of other items were also reduced.

7. Conclusion

Figure 7and 8 describes aspect of before and after improvement activity at A Ward. 5S delivers to this approved result. On the other hand, it is obviously to find out 5S is effect on using for improvement activity and then, it can be said that these two of 5S and improvement activity have synergetic effect.

The following schematic drawings represent the "before and after" of KAIZEN. In this case, 5S components were well incorporated in the actual actions within KAIZEN procedures. Together with various improvement of the work process to decision-making, ordering, processing, and delivering the products to each client, environmental determinant factors are well highlighted as the measures of mistake-proofing in this KAIZEN case at a large scale hospital in Japan. Components of 5S, such as "Sort" and "Set", come back to the KAIZEN practice venues as influential factors.

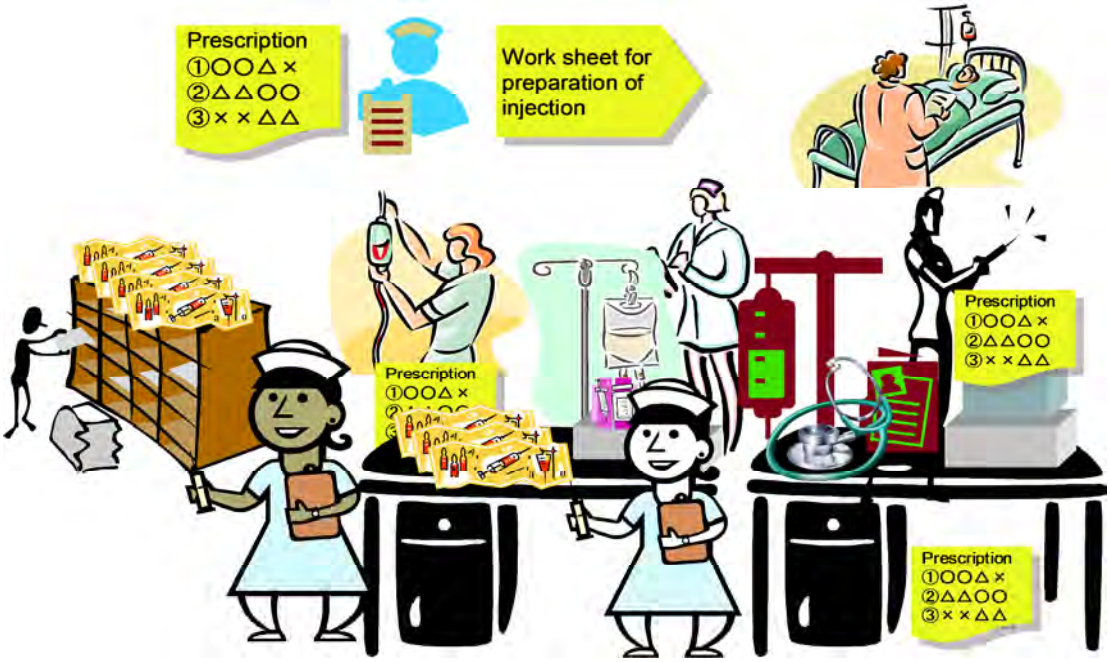


Figure 7: Work environment in Ward A before KAIZEN;
Various nonconformities were seen in hazy work environment.

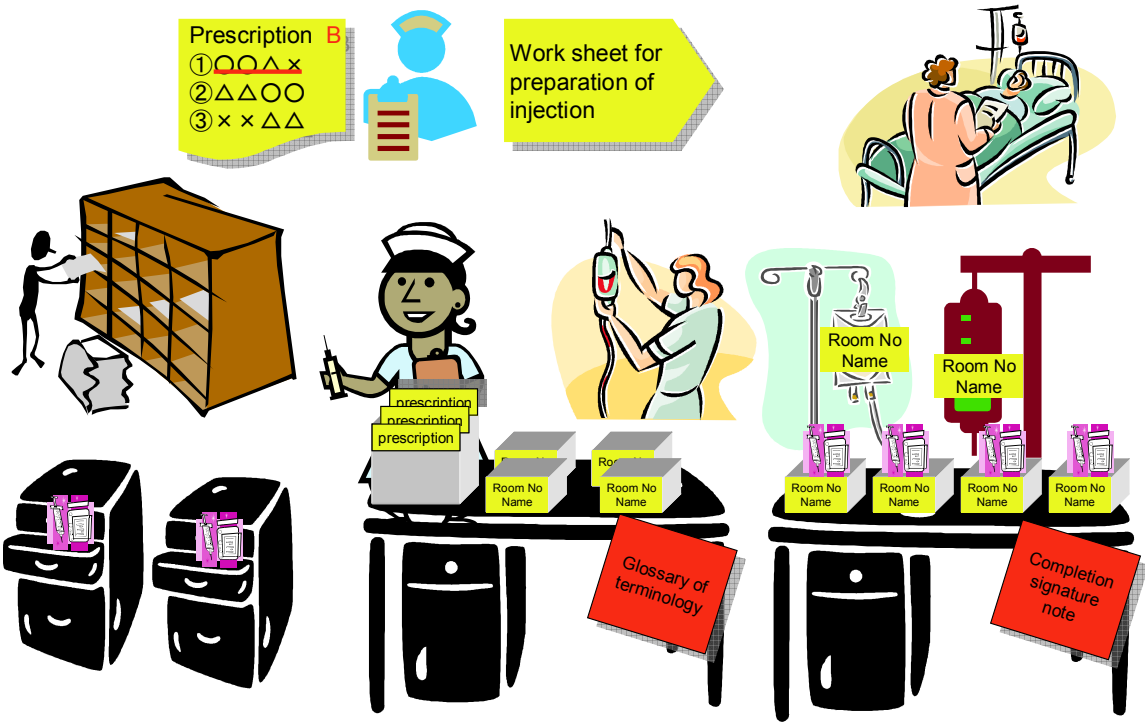


Figure 8: Work environment in Ward A after KAIZEN;
5S was beautifully introduced after eliminating the detected nonconformities during KAIZEN process.

VII-7…Case of Patient satisfaction survey in Uganda (Reference for Chapter IV)

This case describes the example of patient satisfaction survey after the implementation of 5S activities.

View of external clients on changes made by implementation of 5S
The case of a General Hospital in Uganda-

Hisahiro Ishijima
Japan International Cooperation Agency (JICA) expert, assigned to Ministry of Health and Social Welfare, United Republic of Tanzania

Tororo General Hospital in Uganda was selected as pilot hospital of JICA Asia-Africa Knowledge Co-Creation Program (AAKCP) and the hospital started implementing 5S activities since August 2007.

Over two years of 5S implementation, Management of Tororo General Hospital planed to conduct small survey on how external clients (visitors, care takers and patients) are recognizing changes that the hospital made through the implementation of 5S-KAIZEN approaches.

During the survey, three questions were prepared to see the community recognition of the changes and were asked external clients of Tororo General Hospital;

How do you think about health services of Tororo Hospital?
Do you think that Tororo Hospital has changed compared to the past?
For those who answered "Yes" on the Q2, Could you briefly explain what/how has been changed

Total of 104 samples were collected and analyzed. The following table is indicating the sample information of the study.

Table 1: Sample information of the study

1	Sex	Male	54
		Female	50
2	Age	<20	14
		21-30	47
		31-40	26
		41-50	12
		>50	5
3	District	Tororo	94
		The Others	10

For the first question “How do you think about health services of Tororo Hospital”, only 29% of people answered that Tororo General Hospital is providing poor services and lest of 71% are satisfying health services at Tororo General Hospital.

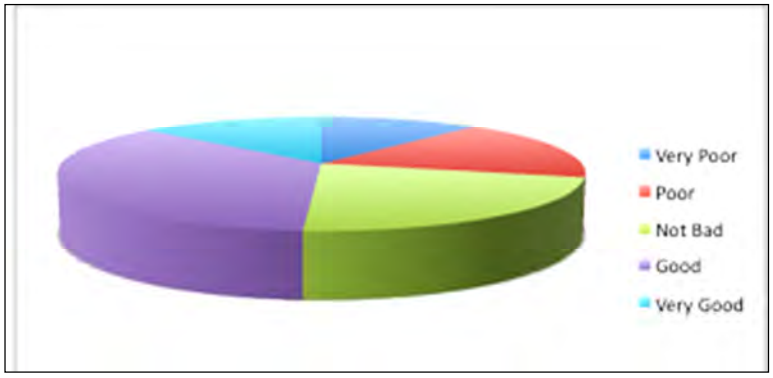


Figure 1: Answers of the first question

For the second question, "*Do you think that Tororo Hospital has changed compared to the past?"* 90 % of people felt that hospital atmosphere is changed in good way

For those who answered, "Yes" on the second question, they were asked, "Could you briefly explain what/how has been changed?" 95% of them are thinking that cleanness is improved, 73% of people felt that staff attitude is improved, 50% of people is thinking that waiting time is reduced, and 71% of them are feeling that reliability of health services is improved

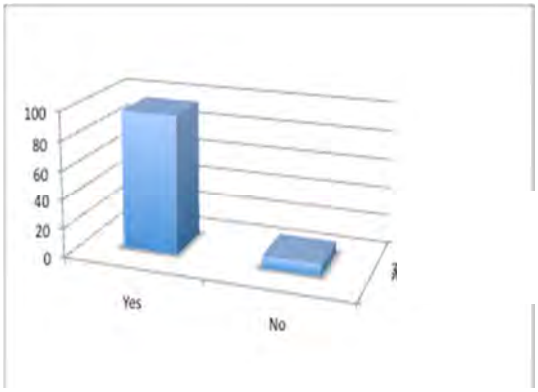


Figure 2: Answers of the second question

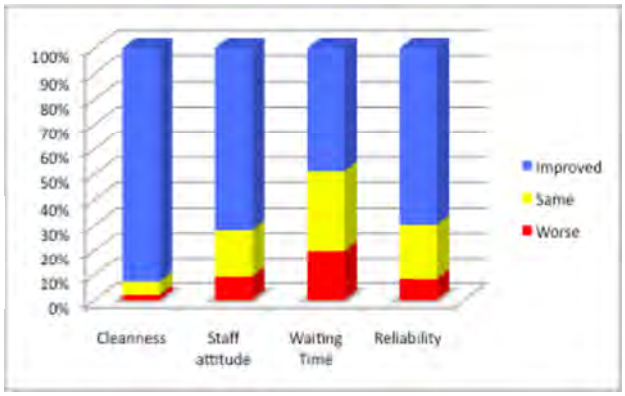


Figure 3: Answers of the third question

It is obvious from the above-mentioned results that External clients (patients, care takers, visitors etc) are recognizing the changes that Tororo General Hospital made in the past few years. In other way of saying that Tororo General Hospital is improving working environment and some service contents through 5S activities.

The hospital management concluded that those changes were made due to the implementation of 5S-KAIZEN approaches. Based on the result of the survey, the hospital management made decision to continue and expand 5S-KAIZEN approaches to all over the hospital.

This result was reported to Ministry of Health, Uganda and the impact of 5S-KAIZEN approaches at Tororo General Hospital was recognized. The Ministry of Health, Clinical Services Department made decision to rollout 5S-KAIZEN approaches nationally in collaboration with Japan International Cooperation Agency (JICA).

VII-8…Story of installation of 5S at health centers in Senegal

Senegal is one of the AAKCP introduced countries and Provincial Hospital in Tambacounda was selected as the pilot hospital to install hospital improvement activities based on 5S-KAIZEN-TQM approach and to disseminate 5S-KAIZEN-TQM approach in Senegal. Additionally, JICA and Ministry of health in Senegal agreed to expand 5S-KAIZEN-TQM approach into primary care level in Tambacounda province then JICA dispatched two Japanese experts. This story was written by the expert regarding how to develop the training courses and consisted of two cases and four stories.

5S CASES in Senegal

Atsuyuki KADO (Case 1-5), Kasumi OGAWA (Case 6) / IC Net Limited

<Case 1> Development and trial of the "participatory 5S training module" with health personnel in Tambacounda, Senegal

After the introduction of 5S to the provincial hospital in Tambacounda, Senegal, in 2007, efforts were made to expand the 5S practice to seven Health Centers in the same province in 2009. In March 2010, Japanese experts and local health personnel developed a participatory training module for learning 5S based on the trial in the seven Health Centers. The module organizes two-day training: the first day for (S1) Seiri [= Sort], (S2) Seiton [= Set], and (S3) Seisou [= Shine]; and the second day for (S4) Seiketsu [= Standardize], and (S5) Shitsuke[5] [= Sustain]. The module specifies that instructors should carry out not just one-way teaching but have facilitation and coaching skills to help the training participants learn more effectively.

When the module was put into practice for the first time, the facilitators were the Japanese experts. Then, in the second round, the field staff became facilitators. Additional instructors are recruited from volunteers who have strengthened managerial and facilitation skills through making arrangements for training facilities and preparing materials. The following sections describe the training module in detail.

[First day of the training] Participatory methods to train (S1) Seiri, (S2) Seiton, and (S3) Seisou

The first day of the training had three parts: lecture; participatory analysis to have participants determine the actual condition and decide a course of action; and OJT to practice immediately (S1) Seiri, (S2) Seiton, and (S3) Seisou.

We realized that most of the personnel are unable to take the first step for 5S in the provincial hospital just by observation. 5S was not spread in the hospital. Moreover, lectures proved ineffective in making participants understand well. Thus it became necessary to use sustainable methods.

Table 1: Training Curriculum of (S1) Seiri, (S2) Seiton, and (S3) Seisou on First Day

60 min.	A: Lecture (introduction)	Introduction to 5S; explanation of 5S Concept and case study of Senegal and Sri Lanka in a lecture
270 min.	B: Participatory analysis of hospitals	Group work: a) Exploring the hospital b) Mapping the facilities[6] c) Taking good and points to improve

[5] Details of Training Module are published in "Detached Health Government Capacity Building Experts (Health Medical Management/Medical Management) Field Implementation Work Report in Tambacounda, Senegal" (French version).

[6] Mapping is a typical tool of PRA: Participatory Rural Appraisal (in English)/MARP: Méthode Active de Recherche et de Planification Participative (in French).

		d) Drafting a mini action plan
120 min.	C: Seiri/Seiton/Seisou as OJT	Group work: Taking practical points from Seiri, Seiton and Seisou on a mini action plan, and then implement them as OJT immediately.
60 min.	D: Lecture	Presentation of "positive attitude" which was well received by African participants in training in Sri Lanka

		
Exploring hospital and doing participatory analysis	Mapping for picking up good points / areas to improve	Participants found many used needles at hospital by doing 3S OJT.

Figure 1: First Day of Participatory 5S Training (Tambacounda, July 2009)

As 5S is a new concept for the participants, the lecture is important for having them acquire new knowledge. At the same time, the participatory analysis helps participants think by themselves which section needs to implement 5S. For instance, a Health Center became aware of the issue of damping used needles through exploring and mapping at hospitals, and adopted 3S OJT as a participatory exercise. In participatory analysis, it is important to discuss improvements at hospitals.

We asked the participants to describe three viewpoints on paper such as "specific action," "responsible person," and "duration" when they designed mini action plans for the dissemination of good practice. For 5S, it is necessary to have each member take responsibility for at least one task. Although some say that they are unable to start quality management without equipment and financial assistance, they are able to begin easily practicing (S1) Seiri, (S2) Seiton, and (S3) Seisou.

[Second day of the training] Participatory method for (S4) Seiketsu, (S5) Shitsuke

There are many definitions of (S4) Seiketsu. However, the common meaning is to spread S1, S2 and S3 to relevant people. The official translation of "Seiketsu" for 5S is Standardize in English and *Standardiser* in French. Shitsuke (S5) is understood as "Following stable rules (to cultivate mentality)". However, if this view is added to monitoring and supervision, it is much easier for Africans to understand. Additionally, "Committee" in English and *"Comité"* in French helped people of West Africa understand (S4) Standardize and(S5) Sustain. It will be desirable to organize a discussion and a question-and-answer session for the end of the second day of the training.

Table 2: Second Day of Training Curriculum on (S4) Seiketsu, (S5) Shitsuke

45 min.	E: Lecture	Not only 5S techniques but also explanation on (S4) Seiketsu and (5S) Shitsuke with "Committee and Monitoring"
150 min.	F: Workshop to establish a committee	Group work: a) playing a skit; b) taking all members and dividing them into teams; c) zoning; d) check mission and rules of committee; e) making action plan by the committee
45 min.	G: Lecture on	Self-monitoring and monitoring with outsider: 1) photo; 2)

	Shitsuke and monitoring	monitoring sheets; 3) method of participatory morning
90 min.	H: Finalizing time	Practicing finalizing a program at the training's discretion. Comprehensive 5S quiz is implemented in Senegal.

On the second day of the training, the workshop to establish a committee is implemented after an explanation on "Committee and Monitoring" related to (S4) Seiketsu and (S5) Shitsuke.

Figure 2: Following All Members for Team Building[7]

Figure 3: Zoning

A skit will be implemented in order to motivate participants at the beginning of group work if there is enough time. It is an effective tool for illiterate people. Then the step of "b) taking all the members and dividing each team[8]" will be done. All the members must be listed and belong to teams known as sub-committees. After all the members are assigned to sub-committees, c) Zoning is done. In this step, the participants who belong to Health Centers describe the Centers' facilities, for instance, and those who belong to large hospitals describe their departments. Each team is to decide a zone to manage by drawing borderlines on a map. There are problems that nobody in any zone in particular is currently responsible for. For instance, some of the medical facilities have much trash in their backyard.

If there is extra time, the next task is to think of d) Mission, Responsibilities, and Rules for the manager, 5S committee and 5S subcommittees. After this training is completed, all participants can start preparing "e) Action Plan to establish a committee" when they return to their medical facility. They can implement such measures as "Organizing a meeting for staff who were absent last time" and "Holding an election to establish a 5S committee."

As mentioned above, the second day of the training is meant to implement the following: (S4) Seiketsu [= standardize]-related task; a) playing a skit; b) taking all the members and dividing them into teams; c) zoning; d) checking the mission and rules of the committee; and e) making an action plan. The explanation on (S5) Shitsuke includes how to monitor (supervise) activities based on the rules. In the last part, a discussion and an easy quiz to enhance the participants' understanding may be held.

<Case 2> Breaking down methods into actual 5S steps to help participants understand

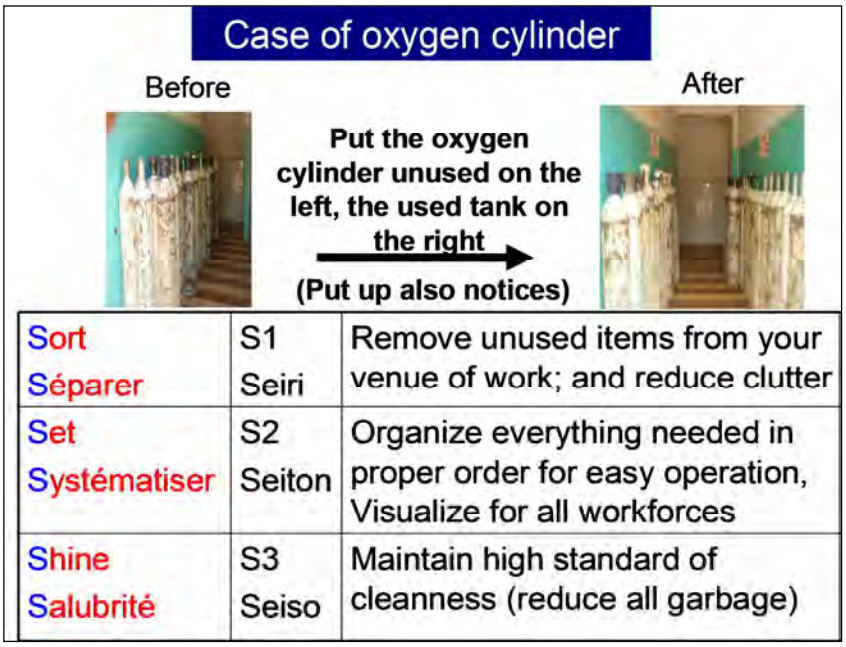
Since 5S is a steady activity for constant improvement, it is difficult to understand 5S just by an explanation of the concept. Thus we describe how to introduce each 5S activity by using the examples of a 5S training course.

[7] This picture shows that one Health Center is organized by 30 staff members. Divided into 6 teams, each team has 5 members. (6 teams x 5 members= 30 people)

[8] WIT: Work Improvement Team

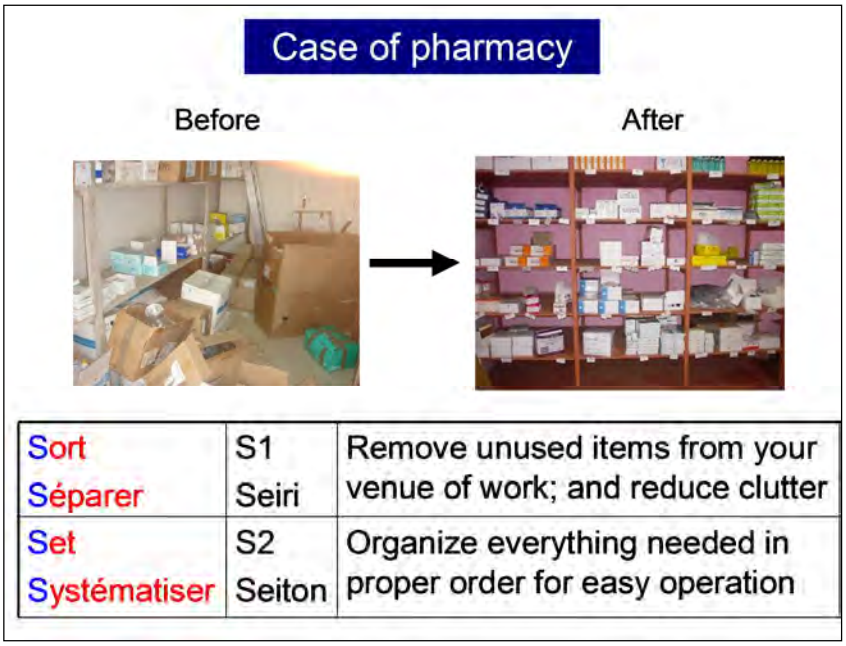
(1) (S1) Sorting oxygen cylinders, (S2) Set and (S3) Shine

Figure 1 shows the picture before the improvement on the left and the picture after the improvement on the right. Since the used cylinders were not separated, the staff wasted time in finding new and full cylinders. For separation, the staff members set the rule as follows: full cylinders are to be stored on the left side of the corridor and used ones are to be stored on the right side. It is an example of (S1) Sort [= Segregate necessary items from unnecessary ones]. In addition, each storage area is marked on the notice boards on both sides. It is an example of (S2) Set [=describe items to make them easy to see and use]. Then the importance of (S3) Shine is also explained.



Sort Séparer	S1 Seiri	Remove unused items from your venue of work; and reduce clutter
Set Systématiser	S2 Seiton	Organize everything needed in proper order for easy operation, Visualize for all workforces
Shine Salubrité	S3 Seiso	Maintain high standard of cleanness (reduce all garbage)

Figure 4: Seiri, Seiton, and Seiso of oxygen cylinder



Sort Séparer	S1 Seiri	Remove unused items from your venue of work; and reduce clutter
Set Systématiser	S2 Seiton	Organize everything needed in proper order for easy operation

Figure 5: Seiri and Seiton at pharmacy

(2) (S1) Sort and (S2) Set in the medicine warehouse

In the picture on the left in Figure 5, carton boxes and medical items are scattered. At first, it is necessary to implement (S1) [= Segregate necessary items from unnecessary items]. In the picture on the right of Figure 2, the names of medicines are shown on all levels of the shelf. It is an example of (S2) to describe the storage locations of all items systematically. In the training course, we explain the concept of (S2) to have participants set each item in the correct storage location like people do at home.

In fact, there were many dead stocks and out-of-stock items in the pharmacy. One of the causes is lack of (S1) Sort and (S2) Set. Sticking empty medicine boxes on the shelves is visually effective, which is a method utilized in the National Medical Research Center of Japan.

(3) (S1) Sort, (S2) Set and (S4) Standardize at the parking lot

In health facilities in Senegal, many broken vehicles and used tires are left. Though used tires are generally the target of Sort as unnecessary items, they were utilized as necessary items on this occasion. Figure 3 shows an example of (S2) Set to manage the parking area systematically by utilizing painted tires.

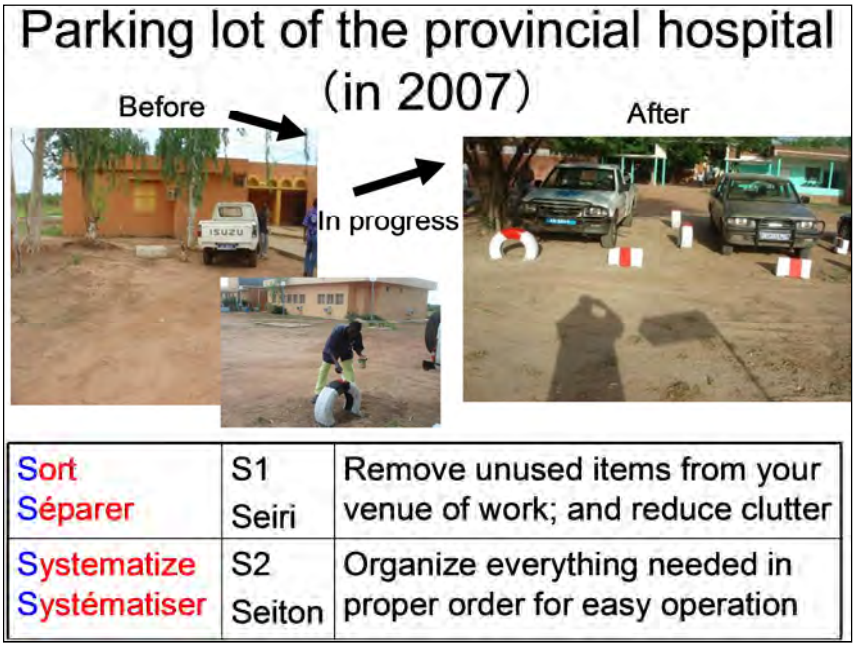


Figure 6: Seiri and Seiton at parking lot

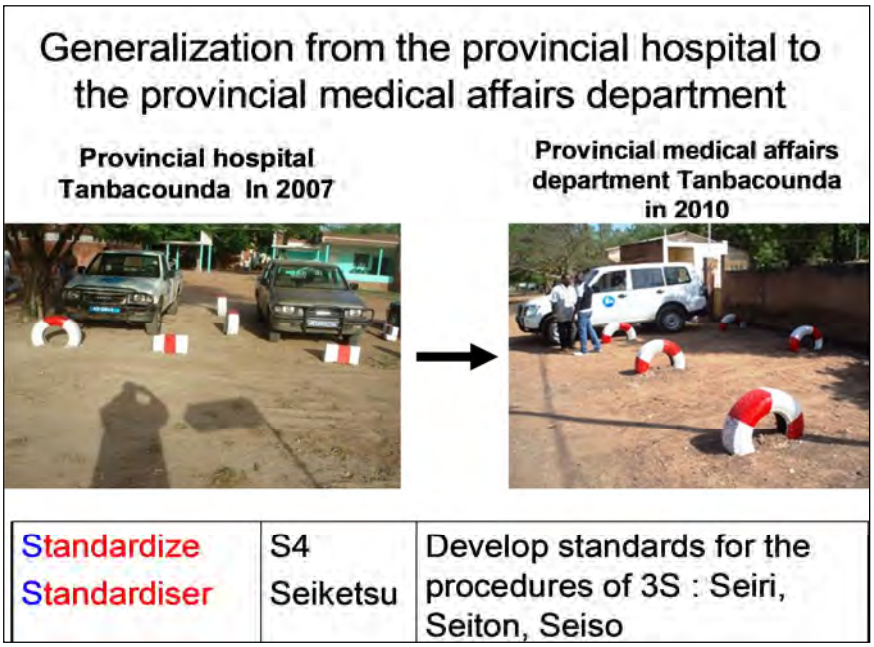


Figure 7: Standardization of parking lot
(The example of the parking lot is the step c.)

It is noteworthy that the good example had influenced the other health facilities. The picture on the right in Figure 6 shows a similar parking lot in front of the Provincial Medical Office in February 2010. (S4) Standardize means standardization and sustain for (S1) Sort, (S2) Set and (S3) Shine. It is the same as expansion and generalization of 3S. In the training course, the following three steps of (S4) standardize are to be described.

Expanding (3S) from some staff members to all the staff members in the department;
Expanding (3S) from one department to all the departments in the hospital; and
Expanding (3S) from one health facility to the other health facilities in an area as a whole.

<Case 3> Example of the Tambacounda Health Center in the Tambacounda province in Senegal (First half: voluntary training of 5S)

The staff members of the Tambacounda Health Center who took the JICA training on Seiri (S1) Seiton (S2) Seiso (S3) held the 5S training voluntarily on August 1, 2009. 45 staff members, i.e., 70% of the Tambacounda Health Center personnel including a cleaner, a guard and a midwife, participated in this training. As JICA did not provide any budgetary support, the Health Center covered 100% of the costs of lunch, daily allowance, transportation expense (FCFA 3000 = USD 6.5 for each person at the exchange rate as of August 1, 2009) for the participants.

The director of the Tambacounda Health Center searched a business site of 5S in French on the Internet voluntarily and presented the contents on that day. She went around a center beforehand and photographed the refinements with a digital camera.

This training was performed mostly in Wolof, the local language of Senegal. In the Health Center, a doctor and a nurse, both of whom are educated, and an employee who does not speak French and is unable to write, work closely together and attend diligently to their daily duties. In the training, the illiterate employee drew maps and took part in analysis. Visual tools for participation model such as mapping were devised so that everybody can participate regardless of the ability, or lack thereof, to read and write.

In the afternoon session in the training, the participants practiced 5S immediately and each group sorted out the warehouse and the desk. Moreover, a group found several hundred needles used for HIV testing which were thrown away near an incinerator, and removed them. After the practice work, in the reflection session, it was revealed that somebody from the youth center, which is a facility outside this Health Center, brought the used needles. Therefore the security staff said that it was necessary to secure the entrance of the Center.

However, the director of the Center suggested that the Center stop looking for the person who threw away used needles. He said, "It is the duty of the youth center, which has its own incinerator, to cope with the used needles by following the rule that such needles must be put in a designated safety box made of corrugated cardboard." She went on, "I suggest that we decide how to collect waste needles from the health posts and the youth center after consultation with the Provincial Medical Officer."

(Second half) Delays in the Health Center due to lack of leadership

Around a half year later, a Japanese expert visited the Tambacounda Health Center. There were many improvements. For example, garbage was removed. Moreover, there was a new system to put waste needles in a safety box. On the other hand, the activity of the 5S Committee stagnated. The main reasons were the retirement of the director of the Center and the transfer the three core members who constituted the 5S Committee. Thus the people who took leadership disappeared. It became clear that a training program to perform (S4) Standardize and (S5) Sustain (Self-discipline) was important. The hearing by the Japanese expert revealed that the activities of the 5S Committee of this center were performed by some upper-level members alone, and a subcommittee (WIT) was not formed in the organization. Thus the majority of the staff members are not able to participate in real 5S activities, and it is difficult for them to be motivated for the activities. Therefore, on the second day, an exercise to form the participation model was held. In this exercise, the names of all employees were listed for assigning them to the sub-committees. In case of transfer of a staff member, which is frequent in Senegal, the deputy leader of a sub-committee can serve as a substitute of the staff member who left until a new staff member is appointed.

<Case 4> Problems and remedies in the Tambacounda provincial hospital

The problems in a small Health Center such as those mentioned above were also seen in a large provincial hospital which comprised of around 180 staff members.

In such a large hospital, many committees were established according to the recommendation of the Ministry of Health and Prevention and the donor agencies. Moreover, a chairperson and a person in charge were appointed but did not perform their duties.

Also, only around ten staff members participated in the activities of the 5S Committee which was created two years ago. In other words, it is hard to tell if other 170 or more staff members participated in 5S activities positively. Therefore we discussed the following remedies with the hospital management.

Reinforcing the 5S Committee in the upper level and establishing sub-committees in all sections such as internal medicine, obstetrics, and surgery, so that all staff members belong to one of them.
For each team in a hospital, it is better to foster an environment of friendly competition ("competition amicable" in French). It is effective to prepare a 5S Award at the end of a term, and hold a seminar for announcing the award.
To have a 5S chairperson stay for a long period, it is better to establish the chairperson service term of one or two years. Moreover, the chairperson should be elected by vote.
The 5S training has two phases. The first stage is the so-called selective training and performs training for leaders and representative levels of each section. The second stage is the so-called non-selective training, which is the training for all staff members such as cleaners, security staff, and ambulance

drivers (The Iizuka Hospital, which is a model institution in Japanese 5S-KAIZEN-TQM, conducts non-selective training for 5S.)

Upon discussions with the hospital, the first election for 5S chairperson was held in February 2010, and a new chairperson took charge. Whether 5S will root in this hospital remains to be seen.

<Case 5> Method to explain (S5) Sustain as monitoring

To have participants understand, the concept of (S5) Shitsuke is explained as "Self-Discipline" in English or "Se Discipliner" in French. We also try to explain Shitsuke as "Supervise" in English and "Suivre" in French.

To continue 5S activities, it is necessary to establish monitoring and supervising systems. Since the monitoring and supervising systems are not set up in the province, 5S activities may not be disseminated.

Although there are several types of monitoring methods to secure the continuity of 5S activities, we focused on the following three points as the result of observation on health staff and health administrators in Tambacounda.
Monitoring implementer
Monitoring opportunity
Monitoring method
Monitoring implementer
(Self-monitoring and monitoring by a third party)
The first point is "Who monitors." The self-monitoring which is managed by the implementer and the monitoring by third party are separate concepts. In the provincial hospitals in Senegal, we explained that self-monitoring meant the monitoring by a 5S sub-committee and the monitoring by a third party meant the monitoring for a 5S sub-committee by a 5S committee.

In each Health Center in Tambacounda, we told stakeholders that self-monitoring meant the monitoring by the staff of the center and the monitoring by the third party meant the monitoring by provincial medical staff who supervised each Health Center quarterly.

With regard to monitoring implementer, it is important to have experienced monitoring implementers who are well trained. A few personnel in Senegal have experience in looking at the attainment of 5S in health facilities in Japan or Sri Lanka.

Table 3: Self-Monitoring and Monitoring by a Third Party (e.g., Tambacounda)

	Self-monitoring	Monitoring by a Third Party
Seven Health Centers (20-60 staff members per center)	Staff of the center	Staff of Provincial Medical Office
Provincial Hospital (180 staff members)	Sub-committee (WIT)	5S committee, 5S Manager (Provincial Medical Office)

Monitoring opportunity (Hospital Round and Meeting)
The second point is the opportunity for monitoring. Here is an outline of "Hospital Round" and "Meeting".

Table 4: Hospital Round and Meeting in Tambacounda

	Hospital Round	Meeting
Seven Health Centers (20-60 staff members per center)	Supervision through a quarterly round trip by Staff of Provincial Medical Office	Coordination of a quarterly meeting by Provincial Medical Officer
Provincial Hospital (180 staff members)	Hospital round to review the activities of 5S sub-committee by 5S manager or 5S committee	The meeting presented 5S activities of each section (Meeting of 5S committee)

The merit of a hospital round is that the monitoring implementer can see the actual situation. The merit of a meeting is that the participants can share the information of 5S activities with one another. Since the hospital round does not go against the meeting, monitoring shall be done in proper combination of the two opportunities.

(3) Monitoring method
The following three methods are effective monitoring methods to attain S5 (Sustain).
Photo taking (Fixed-point observation technique)
Monitoring sheets
Hospital round

[Photo taking (Fixed-point observation technique)]
It is a method to take photos before a 5S activity and take photos from the same angle again after the 5S activity. It is utilized for 5S monitoring in Japan and also possible in Senegal because digital cameras and mobile phones with camera are very common in Senegal

For self-monitoring, a member of the 5S sub-committee (WIT) takes photos of the target location from ten angles before a 5S activity and the member takes photos again from the same angles to confirm the degree of improvement. Printed photos should be stuck on notice boards as a commitment to 5S.

Here is an example of the monitoring by a third party. A staff member of the Provincial Medical Office takes fives photos of each of the good points and points to improve in the Health Center during supervision by round trips, and all the photos from the seven Health Centers are to be presented to the participants of the quarterly meeting. It is also recommendable to establish a 5S award to select three of the most improved cases in the photos and stick the result of the award on the notice boards in the Health Centers.

Since the results of 5S activities are easy to visualize, photo taking is an effective and friendly tool for the stakeholders even though some people are unfamiliar with texts or documents.

[Monitoring sheets]
The monitoring sheets are considered a strong tool for benchmarking several health facilities by the same criteria. For example, it is effective to review the seven Health Centers by the same criteria or review the section in the hospitals by the 5S committee. It is also useful to measure the invisible data such as the number of meetings.

To prioritize the 5S activities in each sub-committee more effectively, it is recommended to have one person or group take monitoring sheets for multiple areas quarterly or periodically and have the results presented in a regular meeting.

On the other hand, self-monitoring faces some limitations. The monitoring sheet is designated for the person who is familiar with texts and documents and the results of the monitoring sheets vary by checker. Thus there are no means to rate superior organizations.

[Supervision through Hospital Round]
Supervision is a method of interactive monitoring in which the supervisor and the member monitor the actual situations and consider the solutions together, like coaching. Since inexperienced staff members are unable to imagine the actual 5S actions, support by the supervisor or the monitor such as discussing the solution and showing 5S actions is effective.

In the Hospital round, although documentation is not a main objective, it is recommendable to take photos and memos.

<Case 6>Improvement in management of used needles

The training and surveys so far made it clear that management of medical waste such as used needles is one of the critical issues in Tambacounda. Thus a lecture on managing medical waste was held. The lecture consisted of a quiz and a presentation.

In the quiz session, participants formed teams by organization and competed with one another. The theme of the quiz was medical waste management. The purpose of the session was to have the participants propose improvement plans and share know-how and knowledge through discussions. The quiz questions were designed to have the participants identify the present situations and issues based on the survey and the literature review of the World Health Organization (WHO) publications and the National Nosocomial Infection Control Program in Senegal.

Below is a sample quiz question.

Question	Select the right answer from the following. Which is the WHO-recommended medical waste segregation if the Health Centers carry out intermediate treatment and final disposal of medical waste?
Choice	Sharp waste, other waste (2 categories) Sharp waste, infectious waste, non-infectious waste (3 categories) Sharp waste, infectious waste, pathological waste, non-infectious waste (4 categories) Sharp waste, infectious waste, recyclable waste, biodegradable waste (4 categories)
Answer	2) Sharp waste, infectious waste, non-infectious waste (3 categories)

In the background of the selection of the question, since WHO recommends Answer 2) “Sharp waste, infectious waste, non-infectious waste (3 categories)”, the five Health Centers in this region manage the medical waste by Answer 1) “Sharp waste, other waste (2 categories)”.

To consider the answer, the participants discuss the following aspects in the team or with other teams.
Choose the answer and the reason
Why is the method recommended by WHO preferable?
How does your Health Center manage the medical waste
Why doesn’t your Health Center follow the recommended method?

Through the discussion, the participants shared the issues of medical waste management in the area and some participants notified that some Health Centers used sewing needles for piercing a hole in and reused the needles. The lecture became the first step to improve the medical waste management through the sharing the information such as high-risk customs.

5S activities for the treatment of used needles are described on Table 5[9]. The participants understood the 5S activities by the table and the photos described on good and bad examples.

[9] 5S activities on the table were designated based on minimum requirements by WHO publications and EPI promotion to medical facilities

Table 5: 5S Activities for Treatment of Used Needles

Sort	S1	Dispose used needles. Do not reuse them. Separate used needles properly.
Set	S2	Install and utilize a safety system in each step. Set safety boxes at the right place. Set color codes and marks on the containers for medical waste to identify them easily. Dispose used needles in the safety box after usage immediately. Define the collection site for safety boxes. Define the schedules and roots for collecting and transporting safety boxes. Store infectious waste in a tightly controlled area with a locked door. Require the personnel to wear protective equipment for handling waste. Keep records of safety boxes. Burn safety boxes at appropriate frequency.
Shine	S3	Do not leave used syringes and needles anywhere indoors or outdoors. Keep clean the places where needles are used and stored.
Standardize	S4	Standardize S1, S2, S3 to reduce needle injuries and the risk of infection.
Sustain	S5	Let all the staff and stakeholders know the user rules, and implement monitoring, informing and supporting to make sure that the rules are obeyed.

VII-9…Story of installation of 5S-KAIZEN at base hospital in Sri Lanka

The story is written by one of the leader for 5S-KAIZEN-TQM in Sri Lanka. His success story in rural area in Sri Lanka is good example how to carry out 5S-KAIZEN in a hospital.

Mahiyangana Base Hospital:
Average Government Hospital to a Benchmark Hospital – A Case Study

Dr S Sridharan MD (USSR), M-Sc (Med.Admn.), MD (Col.), Dip. IT.,
Director, Organization & Development, Ministry of Health, Sri Lanka

Mahiyangana is one of the ancient towns in Sri Lanka. There are literatures to say that Lord Budha visited this sacred place. This town is well known for the Raja Maha Viharaya, especially during the poson festival pilgrims from all over the country visit here. The main income of the population is through agriculture sector. This town and its surroundings are popular for native community (Vedhas).

A Central Dispensary in then Mahiyangana town was upgraded to a District Hospital by then government in order to serve the people better. Later, in 1998, under the Health Master Plan the hospital was upgraded to a Base Hospital. But only in 2003 consultants were appointed to this hospital. Even though this Base Hospital is situated in Badulla District, it caters the some other districts such as Kandy, Matale, Moneragala, Ampara, because Mahiyangana town is connected to all these districts. Therefore patients from all these five districts come for treatment. Since the hospital comes under provincial council, and therefore financial management of the hospital was done by Office of the Regional Director of Health Services.

In 2004, the hospital had a staff of 204 with five consultants and 34 Medical Officers. This hospital had four major specialties with 204 beds. The average OPD patients were 456 / day, average in ward patients were 267 / day.

The hospital initiated the Continuous Quality Improvement Programme under a new leadership five years ago. Then Medical superintendent worked at the Quality management Unit (QMU) of Castle Street Hospital for Women (Teaching) and as a resource person of the Quality Secretariat of Ministry of Healthcare and Nutrition. Therefore he was well aware of the implementation of quality improvement programmes in hospitals. Then the hospital strongly believed that '5S is the Gateway to Improve Productivity, Quality and Safety in the Hospital'. Therefore, it was decided to start the programme with the introduction Japanese 5S and Kaizen techniques. The programme was divided into five phases. They are:

Preparatory Phase
Introductory Phase
Implementation Phase
Expanding Phase
Sustaining Phase

Preparatory Phase
Initially a SWOT analysis was done. It was identified that major strength of the hospital was the staff and their unity. The weakness was lack of knowledge of productivity and quality among staff. Another weakness was the inability to identify the donors or sponsors. The opportunity was the support from villagers and some sort of political commitment. Another vital opportunity was the willingness of the Regional Director of Health Services to support the programme. The threat was from some influential elements of the town who were trying to use the hospital according to their personnel agenda.

A team consisting of nine members from Medical Officers, Nursing Officers, Para Medical Staff, Minor Staff and other category of staff was established. Appointment of such a team ensured that all

categories of staff and giving the ownership to the entire hospital staff. The members were carefully selected with those who have positive mindset and creative thinking. Later this team was turned to 'Quality Improvement Team'. This team was asked to do a situation analysis of the hospital and find the vital areas that need improvement. During the situation analysis, photographs of the situation also were taken. The team identified 26 vital areas. These vital areas were prioritized using performance-importance matrix after the discussion with the sectional heads of the hospital. Patient care, achieving customer satisfaction through employee satisfaction, non-health expectations of the patients, waiting time etc., are the issues that were considered when prioritizing the key areas. The most important areas identified were:

- Waste Disposal System
- Organization of the wards, and other units and establishment of CSSD, CLSD
- Basic Human Needs
- Quality of Work Environment & Quality of Work Life
- Establishment of condemning Stores
- Information analysis
- Drug Management (Mahiyangana was 68 km away from Badulla and if there is urgent requirement for a drug it was necessary to send ambulance to Badulla. This might take at least four hours to get the drug)
- Strengthening of senior and middle level managers in their management skills
- Suggestion schemes from employees, patients and their visitors and Complain handling mechanism
- Monitoring mechanism and developing of performance indicators.

Then vision, mission and values were identified and disseminated to all categories of staff. The Vision of the hospital is 'An Environment Friendly Hospital with Quality Patient Care by Dedicated Work Force', the mission is 'A government hospital, which provides Quality care, according to the needs and expectations of the people, by satisfied work force, through most efficiently managed resources while focusing on environmental safety', and the value is 'Patient Care – Above All'.

With all the above mentioned activities an action plan was developed. A time frame and responsible persons for each activity too identified. The progress was informed to the Provincial and Regional Directors of Health Services in order to get blessing for future endeavours.

Introduction Phase

Introduction phase was stated with a series of lectures done by Dr Wimal Karnadagoda of Quality secretariat, Ministry of Healthcare and Nutrition, Mr. Sena Pieris of Cleaner Production Centre and Medical superintendent of the hospital. At that time it was felt that it is difficult to invite lecturers from Colombo. Therefore, Medical Superintendent of the hospital himself arranged four hour training programmes for the entire staff on every Monday for three months. This training programme mainly focused on 5S, Kaizen, Work Improvement Teams, Quality and Productivity. Two programmes were done on leadership for the middle level managers. Later Mr. M Thilakasiri, Senior Consultant of SLIDA did two lectures to change the attitudes of the staff. After six months of initiating the programme, training programmes are done by Quality Secretariat with study visits through the World Bank fund given to the Badulla district.

The other main activity was daily ward rounds by the Medical superintendent. Matron / in-charge Nursing Sister and Overseer were always accompanied by MS. During this visit, this top management will speak to all categories of staff, educate them, supervise, and do on the job training. During weekends MS visited the entire outside premises with the Administrative Officer and Overseer. This visit helped to improve and maximum utilization of the unutilized space.

Vision, Mission, Values of the hospital was displayed in all the units. This indicated to the staff that there will be some sort of change soon. This helped to initiate the change and to prepare staff for the change.

Implementation Phase

The implementation of 5S was started in Obstetric ward, Paediatric Ward, Indoor Pharmacy, OPD as pilot study. This implementation was well guided by the top management. During this implementation, the ten identified important areas were taken into account.

A process was developed for waste management system (collection, segregation, transportation and final disposal), and wastes were collected according to the standard colour code specified by WHO. The specified colour code is given below:

Figure 1: Colour coding at hospital (1)

To organize the hospitals 5S is implemented. Few activities those were implemented are given below:

Unwanted items from each unit was removed from those units using red tags and sent to the condemning stores. In condemning stores if the item can be used and necessary for another unit is transferred to the unit which needs that particular item. If the item is not necessary, then sent to other hospitals which need that. For example, an operation theatre lamp which was idling in the hospital was sent to the Neurosurgical theatre of Badulla provincial Hospital after obtaining necessary permission from the Bio Medical Engineering division of the Ministry of Health. Further these unwanted items are further examined to see whether they need repairs. If minor repairs, these are done using petty cash and those items which need major repairs were sent to RDHS office to repair using tender procedures. If the unwanted items are condemned then directed to the condemning board.

A visual control system was developed using standard colour code. They are:

General – Black
Infection – Yellow
Red - Unsterile, High Risk, Anything Negative
Blue - Sterile, Anything Positive, Rest rooms
Green – Safe, something related to quality
Brown - Unwanted, Obsolete Items
Grey – Stores
Orange - Cool Room, Reusable Rubber Products

For example the following picture shows how full (blue) and empty (red) oxygen cylinders are stored:

Figure 2: Colour coding at hospital (2)

Alignment and numbering were followed in notice boards, arranging of drugs, medical and non medical items etc. For example:

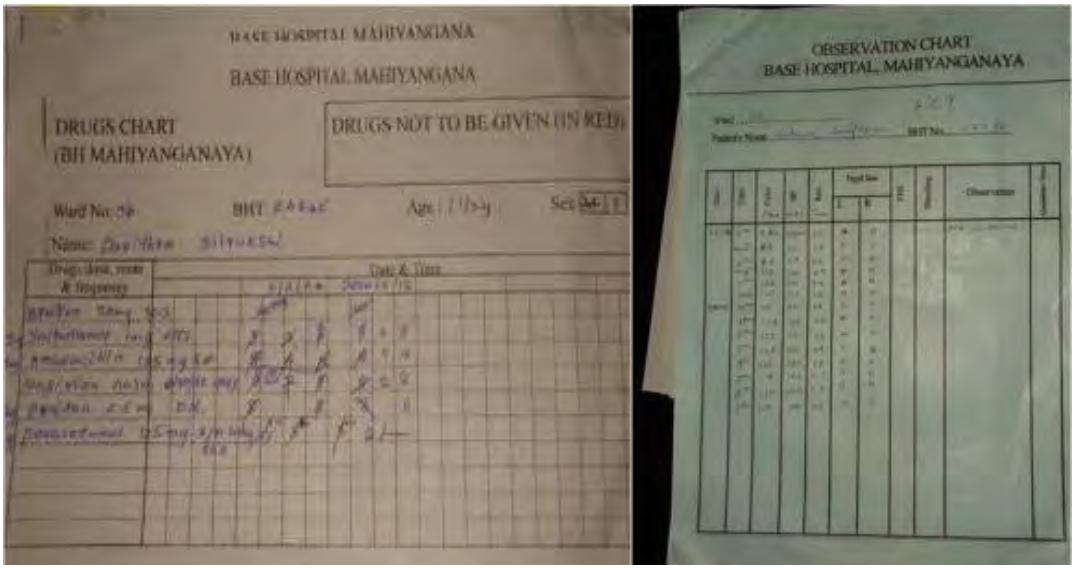
Safety signs were displayed where ever necessary.

Isles were prepared if there is necessary.

Site maps, direction boards and sign boards were done using standard colour codes.

Appropriate symbols were used wherever necessary

Printed forms, drug charts and checklists were introduced to avoid any errors and to improve the Quality of the work life of the staff.



Organization of the registers and other documents

Communication with medical personnel was lacking in the wards. To overcome this visible on call roster was displayed with contact details. This ensured availability of necessary staff on time

Total Clean everywhere is the step towards ‘Total Quality Management’. Therefore more emphasis was given for cleanliness using cleaning check lists and schedules.


Basic Human Needs was given emphasis by increasing the seating facilities for the patients and staff, providing safe drinking water, improving the clean toilet facilities, providing clean linen and bed sheets, etc.




Improving the working environment was done by providing clean, ventilated, bright environment. Later, all the chairs were replaced with revolving chairs. This made the staff comfort and reduced one of the MUDA in Gemba KAIZEN i.e.: motion. Quality of work life was improved by simplifying the work of the staff. This is done by introducing printed forms, charts (earlier these charts and form had to be prepared by Nursing Staff) and providing necessary checklists such pre-operative checklists, discharge checklists, post-operative checklists, etc.

Earlier it was mentioned how the unwanted items are treated in the hospital. These unwanted items until final treatment were stored in surgical and general condemning stores.

More emphasis was given for information analysis. Each ward maintained their statistics and Medial Record Assistant collected all these statistics and maintained the hospital statistics. Further some of the vital statistics were displayed in the notice boards.

In order to avoid shortage of vital and essential drugs and costly drugs, ABC & VEN analysis was used to store the drugs. This ensured available of drugs Just-in-Time.

Dignity of patients were given more emphasis.

Customer satisfaction surveys, suggestions, staff suggestions were vital components for the improvement. Staff suggestions were encouraged through Work Improvement teams (WIT) and Kaizen Suggestion Schemes. Customer Satisfaction Surveys were routinely carried out and the results were disseminated at the sectional heads meetings. Customer suggestions were encouraged through suggestions boxes. Otherwise, letters with self-addressed envelopes were sent to randomly selected patients who had been treated at the hospital. The letters wish the patient good and ask their suggestions, if any, to improve the hospital service. These suggestions were also highlighted at the sectional heads meetings.

Supervision, Monitoring and on-the job training were other important factors that contributed to the improvement.

Weekly clinical meetings were arranged in order to improve the knowledge of the medical staff on current topics. Interesting and rare cases treated during that week also discussed to familiarize with these cases by the medical personnel.

Staff welfare and spiritual health were also entertained. These activities brought each category of staff more closely and developed a friendly environment.

Expanding Phase

The lessons learnt from the introduction phase were shared between managers of different levels. This gave the confidence to managers those who were not positive towards this programme. Finally all the units started the Continuous Quality Improvement Programme through 5S, Productivity.

By this time, after one year of the initiation of this programme the Medical Superintendent (MS) had to transfer from the hospital. The Acting MS dedicatedly continued with this programme because he too involved during initiation of this programme. Then, the as mentioned earlier, the Quality Improvement Team was fully aware of the activities to be continued. This indicates how this improvement programme can be continued even the head of the institution had to leave with some valid reasons.

The establishment of CSSD and CLSD are also important in order to reduce the infection rates and reduce the inventory burden of the in-charge Nursing Officers. Therefore, a CSSD and CLSD were started with available resources.

Criteria for the selection of best employees in various categories of staff were developed by the Quality Improvement Team after consulting all categories of staff. Accordingly, the employees of different categories of staff were selected according to these criteria.

Customer satisfaction surveys and employee satisfaction surveys also continued. These surveys really helped to identify the expectations of the patients. When action plan was made these surveys too taken into account.

Performance review meetings and clinic cal audits were conducted routinely. During these meetings all categories of staff were invited to participate irrespective of the position.

By this time the hospital was appreciated by the PDHS, RDHS, and some other government organizations and by the public. Then the hospital was declared as the benchmark for all hospitals in Badulla District.

The staffs were made aware of the objectives of the hospital apart from the vision, mission and values. This was done by quiz and essay competitions.

Sustaining Phase
After implementing 5S and productivity concepts in all the units sustaining phase was started. The main reason for the success of sustaining was the Quality Improvement Team.

Due to various reasons Quality Management Unit was not established and the quality related work were done directly by the Medical Superintendent. During this phase Quality Management Unit was established with a permanent staff to coordinate quality related work.

At this stage operational level staff and minor staff also taken into account and them too trained. Even though cleaning service and security are outsourced, the employees of this services also made aware of their importance in this programme.

Customer satisfaction surveys and employee satisfaction surveys are continued and the findings are used as done earlier.

Performance review meetings and supervision are carrying on.

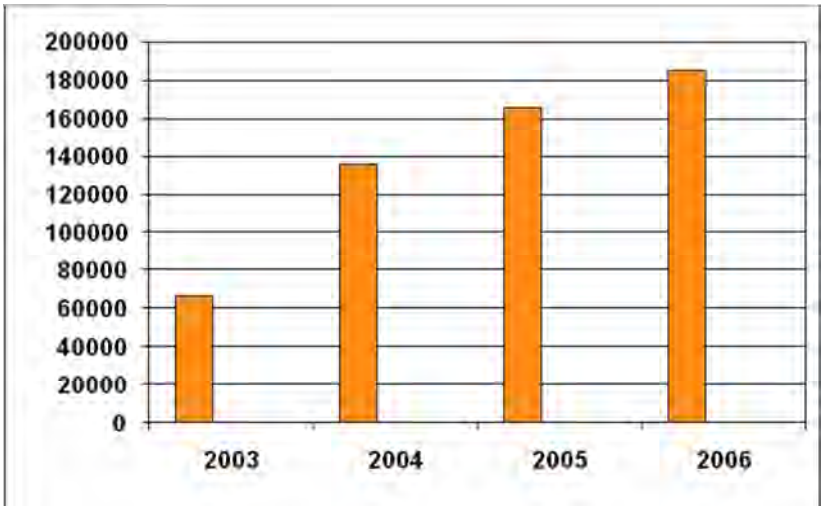
At this stage more emphasis was given to Kaizen activities and Kaizen suggestion schemes.

The hospital applied for awards at this stage and won several awards including Productivity award, Taiki Akimoto award, etc.

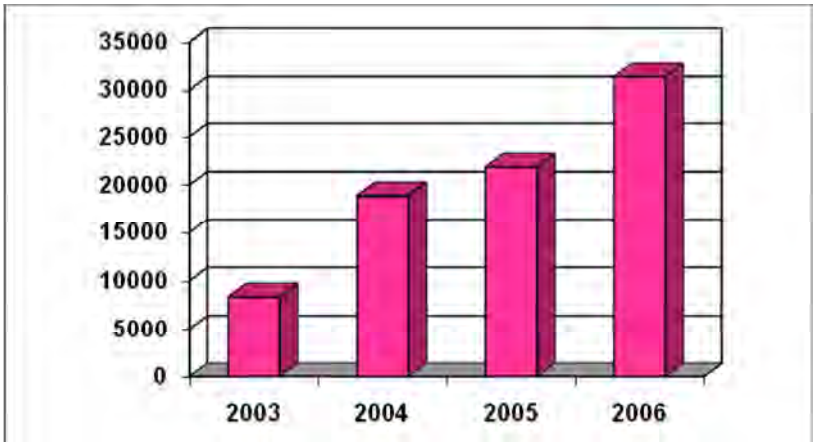
Results

The results of this change were very fruitful. Some of them are given below.

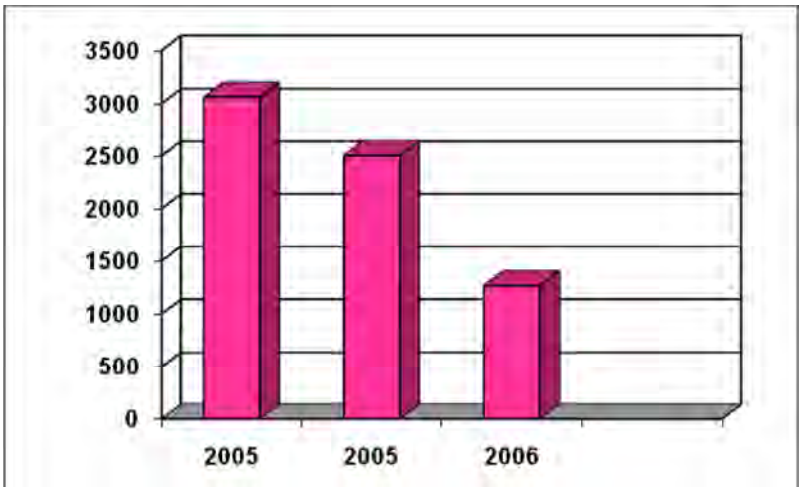
The number of patients attending the Out Patient Department increased considerably.



Number of patients attending medical clinics increased drastically.



There was a sharp decrease in the infection rates, maternal deaths.
Cost analysis was carried out and it ensured in considerable reduction in the cost. The following chart shows the cost per inward patient.



Comparing Before and After.
It is always interesting to compare before situation after the implementation. The following shows those changes.

The entrance to the Out Patient Department

Before	After
	

Waiting Area

Before	After
	

Wards

Before	After
	

Basic Human Needs

Before	After
	

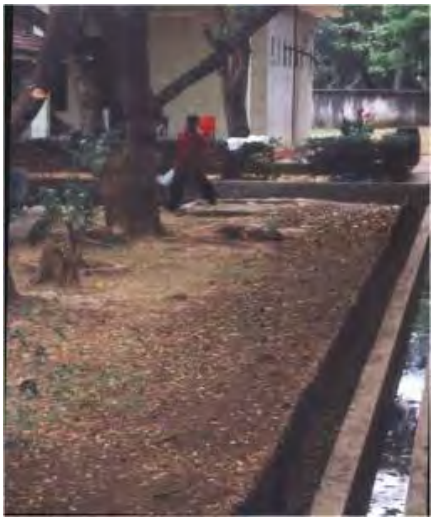
Kitchen

Before	After
	

Waste Disposal

Before	After
	

Healing Environment

Before	After
	

Toilets

Before	After
	

Conclusion

In late 1990s and early 2000 Mahiyangana hospital was popularly known as station for punishment transfer. Today, several government organizations as well as private organizations are selecting Mahiyangana hospital for their study tours. In 1997, participants from eight African countries along with Japan delegates visited this hospital as a study tour funded by Japan International Cooperation (JICA). Since then many international health managers visited this hospital to witness the marked improvement here. Most of the visitors' comments are that the changes were made with less cost and felt the implementation of 5S, Productivity and Quality concepts does not need lots of money, but a big positive attitude and mindset.

VIII…Templates

VIII-1…Monitoring and Evaluation Sheet for Progress of 5S-KAIZEN Activities

MONITORING AND EVALUATION SHEET FOR THE PROGRESS OF 5-S ACTIVITIES

	Ver. 2013-February					Date: / / (D / M / Y)	
	HOSPITAL:	DEPARTMENT:					
	DESCRIPTION	Very poorly	Poorly	Fairly	Well	Very well	AWARD MARKS
1	**LEADERSHIP** Role & Commitment of Management, Sustainability of 5-S activity, Training Programme for Middle Mgt., Setting up 5-S Committees, 5-S Campaigns.						
1.1	Commitment, knowledge, Awareness on 5S among Managers and health workers	1	2	3	4	5	
1.2	5S progress meeting, monitoring evaluation conducted by WIT and recorded in minutes	1	2	3	4	5	
1.3	Evidence of trainings conducted for Managers and health workers	1	2	3	4	5	
	TOTAL	Full mark 15					0
						Acquired marks / 15 x 100 =	0
2	**SEIRI – (SORTING) "Sasambua"** Clutter free Environment in Premises, Inside Offices, Work Place, etc. Evidence of removal of unwanted items should be evident all around.						
2.1	Unwanted items removed from Premises, Offices, Work Places including drawers, cabinets and shelves	1	2	3	4	5	
2.2	Walls are free of old posters, calendars, pictures	1	2	3	4	5	
2.3	Notice Boards – Current Notices with removal instructions	1	2	3	4	5	
2.4	Color cording for waste disposal maintained and standards followed	1	2	3	4	5	
	TOTAL	Full mark 20					0
						Acquired marks / 20 x 100 =	0
3	**SEITON – (SETTING / ORGANISATION) "Seti"** Ability to find whatever is required with the least possible delay, evidence of eliminating the waste of time throughout the Institute/Organization.						
3.1	Photographic evidence of Pre 5-S Implementation and afterwards	1	2	3	4	5	
3.2	Visual Control methods adopted to prevent mix-up of items (files, equipment, tools etc.)	1	2	3	4	5	
3.3	Directional Boards from hospital entrance to all facilities under your section/departments(office,wards,Laboratory etc.) and corridors are clearly marked	1	2	3	4	5	
3.4	All machines/Rooms/Toilets/Switches/fans regulators etc. have identification labels	1	2	3	4	5	
3.5	All items are arranged according to 'Can See', 'Can Take Out' & 'Can Return' principle	1	2	3	4	5	
3.6	X-axis, Y-axis alignment is evident everywhere	1	2	3	4	5	
	TOTAL	Full mark 30					0
						Acquired marks / 30 x 100 =	0
4	**SEISO – (SHINING / CLEANLINESS) "Safisha"** The Cleanliness all round the Institution should have been carried out according to the 5-S Concepts.						
4.1	Floors, Walls, Windows, Toilets, Change Rooms in working order & clean	1	2	3	4	5	
4.2	Cleaning responsibility Maps and Schedules displayed	1	2	3	4	5	
4.3	Waste bin strategy is implemented	1	2	3	4	5	
4.4	Use of adequate cleaning tools is evident	1	2	3	4	5	
4.5	Storage of cleaning tools – Brooms/Maps/Other equipment	1	2	3	4	5	
4.6	Machines/Equipment/Tools/Furniture at a high level of Cleanliness & maintenance schedules displayed	1	2	3	4	5	
	TOTAL	Full mark 30					0
						Acquired marks / 30 x 100 =	0
5	**SEIKETSU – (STANDARDIZATION) " Sanifisha"** High level of Standardization in all activities carried out in SEIRI, SEITON and SEISO and the evidence of such standards being practiced all around.						
5.1	Adopt 5-S procedures & standardized on Check list, Labels Corridors/Isles & Gangways	1	2	3	4	5	
5.2	Standardization of Maintenance/Storage of Files/Records / Orderliness in Keeping Furniture/Equipment in Offices/Workplaces, etc.	1	2	3	4	5	
5.3	Standardized check lists for common Administrative Procedures in hospital and department	1	2	3	4	5	
	TOTAL	Full mark 15					0
						Acquired marks / 15 x 100 =	0

6	**SHITSUKE – (SUSTAIN / SELF DISCIPLINE) "Shikilia"** Evidence of an disciplined approach to all 5-S activities through proper Training & Development, which shows the sustainability in the long term.						
6.1	Evidence of regular training program for all categories of Employees in the section	1	2	3	4	5	
6.2	Evidence of WIT Activities & promotion of Kaizen Schemes	1	2	3	4	5	
6.3	Evidence in carrying out Internal Audits by WIT	1	2	3	4	5	
6.4	Evidence of Self Discipline among visitors to the Institution	1	2	3	4	5	
6.5	Evidence of Self-Discipline in the overall Institution	1	2	3	4	5	
	TOTAL	**Full mark 25**					**0**
						Acquired marks / 25 x 100 =	**0**
	GRAND TOTAL for 5S activities	**Full mark 135**					**0**

KAIZEN

7	**Productivity/Services** Measures how efficiently inputs to Output are used to produce goods & services with better management techniques and work methods.						
7.1	Evidence of methods & systems adopted to improve productivity/employee	1	2	3	4	5	
7.2	Efficiency and effectiveness, use of innovative method to increase and sustain productivity	1	2	3	4	5	
7.3	Evidence in the use of 5S Process to increase Productivity	1	2	3	4	5	
	TOTAL	**Full mark15**					**0**
						Acquired marks / 15 x 100 =	**0**

8	**Quality** Goal is to create satisfied customers by doing 100% right work, responding speedily to requirements every time thus gaining trust & confidence.						
8.1	Communication plans are evident for Implementation of Quality Improvement	1	2	3	4	5	
8.2	Evidence of fewer rejects, less wastage, less rework through 5S Process	1	2	3	4	5	
8.3	The Quality in the Process of the Manufacture/Service by 5S implementation	1	2	3	4	5	
	TOTAL	**Full mark 15**					**0**
						Acquired marks / 15 x 100 =	**0**

9	**Cost** The intrinsic cost of providing products/services to declared standards by a given specified process right first time and every time						
9.1	Evidence in reduction in cost of materials, Labor, Energy, Overheads lowering of defects etc. by introducing 5S concept	1	2	3	4	5	
9.2	Tangible cost advantages through 5S methods in waste control	1	2	3	4	5	
9.3	Evidence of lowering Inventory Cost by the use of 5S Methods	1	2	3	4	5	
	TOTAL	**Full mark 15**					**0**
						Acquired marks / 15 x 100 =	**0**

10	**Safety** The overall safety to Employees, Visitors and Property is evidently displayed by the use of 5S Process						
10.1	Evidence of the effect of safety measured by less accidents occurred in the year	1	2	3	4	5	
10.2	Methods applied in Machinery & Equipment on safety measures	1	2	3	4	5	
10.3	Methods applied to protect the Employees/Visitors on accident	1	2	3	4	5	
10.4	Evidence of Safety Measures applied in providing an excellent health service	1	2	3	4	5	
10.5	Evidence knowledge and skills of employee on safety	1	2	3	4	5	
	TOTAL	**Full mark 25**					**0**
						Acquired marks / 25 x 100 =	**0**

11	**Delivery** Evidence in the reduction of the delivery time of the Product/Service by the implementation of 5S Process						
11.1	Evidence of timely delivery of Products/Services	1	2	3	4	5	
11.2	Overall effect to health facility by reducing delivery time	1	2	3	4	5	
11.3	Evidence of employee participation to reduce the delivery time	1	2	3	4	5	
11.4	Evidence of Just In Time in the hospital	1	2	3	4	5	
	TOTAL	**Full mark 20**					**0**
						Acquired marks / 20 x 100 =	**0**

12	**Morale** Evidence in the overall Institution/Organization in improving the Morale by the implementation of 5S Process						
12.1	Level of morale displayed by Managers & Workers	1	2	3	4	5	
12.2	Evidence of projects carried out by the employees to display high level of Morale	1	2	3	4	5	
12.3	Evidence of 5S - KAIZEN mindset or TQM culture	1	2	3	4	5	
	TOTAL	**Full mark 15**					**0**
						Acquired marks / 15 x 100 =	**0**

13	**5S Organization, Work Improvement Team (WIT)** Role &Activities of WIT,						
13.1	Member of WIT are actively working	1	2	3	4	5	
13.2	WIT's activities are carried out according schedule	1	2	3	4	5	
13.3	Evidence of regular WIT and QIT meeting	1	2	3	4	5	
	TOTAL	**Full mark 15**					**0**
						Acquired marks / 15 x 100 =	**0**

14	**Empwerment of hospital staff through 5S, KAIZEN, TQM** Opportunity and emvironment for empowerment for hospital staff by themselves						
14.1	Evidence of learning opportunity for 5S, KAIZEN, TQM	1	2	3	4	5	
14.2	Seminar and Training on 5S-KAIZEN-TQM are conducted for WIT members	1	2	3	4	5	
	TOTAL	**Full mark 10**					**0**
						Acquired marks / 10 x 100 =	**0**

	GRAND TOTAL for KAIZEN activities	**Full mark 130**	**0**

VIII-2…Monitoring and Evaluation Sheet for Progress of 5S-KAIZEN Activities Points to be observed

	DESCRIPTION	Points to be observed
1	**5S LEADERSHIP OF HOSPITAL / DEPERTMENT MANAGEMENT** Role & Commitment of Management, Sustainability of 5-S activity, Training Program for Middle Mgt., Setting up 5-S Committees, 5-S Campaigns.	
1.1	Commitment, knowledge, Awareness on 5S among Managers and health workers	Observe 5S implementation and attitude of staff, and make some questions to section in-charge and staff for checking their knowledge and commitment on 5S
1.2	5S progress meeting, monitoring and evaluation conducted by WIT and recorded in minutes	Ask section in-charge and staff to show us minutes of meeting and other record on 5S activities. Check the contents of records and judge whether records are kept well and accessible or not.
1.3	Evidence of trainings conducted for Managers and health workers	Ask section in-charge and staff to show us training report/manual/material for internal training.
2	**SEIRI – (SORTING) "Sasambua"** Clutter free Environment in Premises, Inside Offices, Work Place, etc. Removal of unwanted items should be evident all around.	
2.1	Unwanted items removed from Premises, Offices, Work Places including drawers, cabinets and shelves	Observe mentioned places and check whether unnecessary items are removed or not.
2.2	Walls are free of old posters, calendars, pictures	Observe walls, doors and notice boards whether old posters, calendars, picture are removed from them.
2.3	Notice Boards – Current Notices with removal instructions	Observe and check the information displayed on the notice board. It is also important to check if period of display and its instruction are given or not.
2.4	Color coding for waste disposal maintained and standards followed	Observe if Color-coding for waste disposal are applied and check if the instruction of colors and usage for each color are given and shared by all the staff.
3	**SEITON – (SETTING / ORGANISATION) "Seti"** Ability to find whatever is required with the least possible delay, evidence of eliminating the waste of time throughout the Institute/Organization.	
3.1	Photographic evidence of Pre 5-S Implementation and afterwards	Observe and check whether the section displays or keeps pictures of before 5S or not. If you ask and answer is "Pictures are kept by QIT", do not mark more than 3 (Fairly implemented)
3.2	Visual Control methods adopted to prevent mix-up of items (files, equipment, tools etc.)	Observe and check whether the section is using "visual control method" or not. Note that labeling and symbol are not a "visual control method" unless they are designed to manage or control certain operations/processed items
3.3	Directional Boards from hospital entrance to all facilities (office, wards, Laboratory etc.) and corridors are clearly marked	Observe and check whether directional boards to the section are displayed or not at corridors and entrance
3.4	All machines/Rooms/Toilets/Switches/fans regulators etc. have identification labels	Observe and check whether all machines/Rooms/Toilets/Switches/fans regulators etc. are labeled or not
3.5	All items are arranged according to 'Can See', 'Can Take Out' & 'Can Return' principle	Observe and check whether items, equipment etc. are arranged properly to minimize time for searching items with proper workflow
3.6	X-axis, Y-axis alignment is evident everywhere	Observe and check the arrangement of tools and equipment on working bench, furniture and papers & posters on notice boards are aligned on X-Y axis.
4	**SEISO – (SHINING / CLEANLINESS) "Safisha"** The Cleanliness all round the Institution should have been carried out according to the 5-S Concepts.	
4.1	Floors, Walls, Windows, Toilets, Change Rooms in working order & clean	Observe general cleanness of the section e.g. floors, walls, windows, toilets, change rooms and check whether they are functioning or not
4.2	Cleaning responsibility Maps and Schedules displayed	Check whether the section has clear cleaning schedule and map or list of areas to be cleaned.
4.3	Waste bin strategy is implemented	Observe and check whether the section is utilizing proper waste bins and wastes are segregated or not. Even if waste bins are color coded, if segregation is not done or they use bin liner in different/inconsistent colors, do not mark more than 3 (Fairly implemented)
4.4	Use of adequate cleaning tools is evident	Observe and check whether the section has mops, brooms and other common cleaning tools. If cleaning is outsourced, ask the company to show their cleaning tools. It is recommend for each section to keep mops and brooms for sudden incidents
4.5	Storage of cleaning tools – Brooms/Maps/Other equipment	Observe and check whether the section is storing cleaning tools in proper manner e.g. hung in designated spot with labels
4.6	Machines/Equipment/Tools/Furniture at a high level of Cleanliness & maintenance schedules displayed	Observe and check whether the section maintains cleanness of machines, equipment and tools, and make them ready for use.

5	**SEIKETSU – (STANDARDIZATION) " Sanifisha"** High level of Standardization in all activities carried out in SEIRI, SEITON and SEISO and the evidence of such standards being practiced all around.	
5.1	Adopt 5-S procedures & standardized on Check list, Labels Corridors/Isles & Gangways	Observe and check 1) whether QIT or the section has standardized 5S tools e.g. size of labeling and signboards, and 2) whether the section has developed checklists to maintain the condition established for S1-S3. If they have standardized/developed, you need to check how those tools/checklists are used as well.
5.2	Standardization of Maintenance/Storage of Files/Records / Orderliness in Keeping Furniture/Equipment in Offices/Workplaces, etc.	Observe and check whether the section has developed SOP (Standard Operating Procedures) for maintenance of machines, storage of files or records, handling and arrangement of equipment, furniture and so on or not. If you do not see SOP close to the machines or equipment, do not mark more than 3 (Fairly implemented)
5.3	Standardized check lists for common Administrative Procedures in hospital and department	Observe and check whether the section developed check lists for file keeping, reporting, shift change, information sharing and other administrative procedures or not. If the checklists have been
6	**SHITSUKE – (SUSTAIN / SELF DISCIPLINE) "Shikilia"** Evidence of a disciplined approach to all 5-S activities through proper Training & Development, which shows the sustainability in the long term.	
6.1	Evidence of regular training program for all categories of Employees in the section	Check whether the section has orientation or training program for newly assigned staff to the section or not and ask staff to show the records.
6.2	Evidence WIT Activities & promotion of Kaizen Schemes	Check whether the section started to introduce small Kaizen such as Kaizen suggestions (brainstorming for improvement of work) or not. Check minutes of WIT meeting, Kaizen suggestion sheet etc.
6.3	Evidence in carrying out Internal Audits by WIT	Check whether the section has records of M&E activities (self evaluation and checklist for daily 5S implementation) with pictures or not
6.4	Evidence of Self Discipline among visitors to the Institution	Check whether the section has evidences (message, posters, slogans) for increasing awareness of patients/care-takers/visitors on 5S activities such as cleaning rooms and toilets, waste segregation, hand washing etc. or not. It is also necessary to observe behavior of patients/care-takers/visitors if they are following the mentioned instructions or not.
6.5	Evidence of Self-Discipline in the department/section	Check whether the section has records or evidences (message, posters, slogans) for increasing awareness of staff on 5S activities among staff working in the section. It is also necessary to observe how staff is performing.

KAIZEN

7	**Productivity/Services** Measures how efficiently inputs to output are used to produce goods & services with better management techniques and work methods.	
7.1	Evidence of methods & systems adopted to improve productivity/employee	Observe and check whether the section has records or evidences of implementing or introducing some method or systems such as "KANBAN", "Time management", "Process checklist" etc. and
7.2	Efficiency and effectiveness, use of innovative method to increase and sustain productivity	Observe and check whether the section is applying innovative methods for increasing/sustaining productivity (such as "visual control for stock management", "placement of equipment and tools based on staff movement", etc.) or not
7.3	Evidence in the use of 5S Process to increase Productivity	Observe and check whether the section is practicing S1, S2 and S3 for sustaining clean and conducive working environment for productivity
8	**Quality** Goal is to create satisfied customers by doing 100% right work, responding speedily to requirements every time thus gaining trust & confidence.	
8.1	Communication plans are evident for Implementation of Quality Improvement	Observe and check whether the section is identified how to inform progress of planed activities, resource usage, process of quality improvement etc. to stakeholders by using "standard ranges", "Newsletters" and so on.
8.2	Evidence of fewer rejects, less wastage, less rework through 5S Process	Observe and check whether the section is taking measures or applied system to reduce wastes or rework by using 5S such as " setting by recycling of plastic container", " setting by visual control for easy inventory", "Standardized checklist for administrative work" etc. or not
8.3	The Quality in the Process of the service by 5S implementation	Observe and check whether the section is considering quality of services such as "waiting time reduction", "clean ward facility", "appropriate consolation time" etc. by 5S activities or not.

9	**Cost** The intrinsic cost of providing products/services to declared standards by a given specified process right first time and every time	
9.1	Evidence in reduction in cost of materials, Labor, Energy, Overheads lowering of defects etc. by introducing 5S concept	Check whether the section is "cost conscious" (thinking or waste of time, energy, money with unnecessary movement, order etc.) or not.
9.2	Tangible cost advantages through 5S methods in waste control	Check inventory book, supply order records etc.,, and observe whether the section is getting advantage on cost reductions through 5S approach (especially S1, S2, and S4) or not
9.3	Evidence of lowering Inventory Cost by the use of 5S Methods	Observe and check whether the section's store is well organized and arranged with proper labeling and has inventory list. It is also need to be checked whether the section is conducting inventory of stock regularly or not. If there is not record of inventory, do not mark more than 3 (Fairly implemented)
10	**Safety** The overall safety to Employees, Visitors and Property is evidently displayed by the use of 5S Process	
10.1	Evidence of the effect of safety measured by less accidents occurred in the year	Ask the staff to show you incident reports. If the incident reports is not existing, mark low
10.2	Methods applied in Machinery & Equipment on safety measures	Observe and check whether the section developed SOP for machines and equipment, applied danger marks and symbols around machines and equipment, or not
10.3	Methods applied to protect the Employees/Visitors on accident	Observe and check whether the section has standing protection gears such as gloves, aprons, goggles etc., and applied warning signs and symbols, or not
10.4	Evidence of Safety Measures applied in providing an excellent health service	Observe and check whether the section introduced safety measures for provision of health care, such as prevention of needle poking, earth wire with ECG machine, proper antiseptic procedure, double checking for medication etc., or not.
10.5	Evidence knowledge and skills of employee on safety	Check whether the staffs working in the section have knowledge and skills on safety measures for workers, visitors and patients, such as KYT (Danger Prediction Training) or not. If the staff cannot answer safety measures, even if fire distinguisher, first aid kit etc. are observed, do not mark more than 3 (Fairly implemented)
11	**Delivery** Evidence in the reduction of the delivery time of the Product/Service by the implementation of 5S Process	
11.1	Evidence of timely delivery of Products/Services	Observe and check whether the staffs working in the section are attending patients when they are demanded by patients or not
11.2	Overall effect to health facility by reducing delivery time	Observe and check whether the system or mechanism established by the section for reducing delivery time is applied in other sections and departments or not. If the method is not well recognized by others and QIT, do not mark more than 3 (Fairly implemented)
11.3	Evidence of employee participation to reduce the delivery time	Observe and check whether the section established system or mechanism to reduce the delivery time such as reduction of paper work, modification of process, proper setting and arrangement of necessary tools and equipment etc.
11.4	Evidence of Just In Time (JIT) in the hospital	Observe and check whether the section understood the meaning of JIT and applied in their services such as medication delivery from pharmacy to ward, tool kit delivery from CSSD to OT, other supply from central store to department etc.
12	**Morale** Evidence in the overall Institution/Organization in improving the Morale by the implementation of 5S Process	
12.1	Level of morale displayed by managers & workers	Observe and check whether section in-charge and WIT members obtained medical ethics thorough asking questions on customer and quality of care. If the staff cannot answer correctly, do not mark more than 3 (Fairly implemented)
12.2	Evidence of projects carried out by the employees to display high level of Morale	Observe and check whether WIT members introduced or established some mechanism (such as " learning customer care ", " display monthly slogan for customer care") for improvement morale among
12.3	Evidence of 5S - KAIZEN mindset or TQM culture	Observe and ask staffs on actual purposes of 5S – KAIZEN approaches. If the staff cannot answer correctly, do not mark more than 3 (Fairly implemented)
13	**5S Organization, Work Improvement Team (WIT)** Role &Activities of WIT	
13.1	Member of WIT are actively working	Observe and check whether WIT members are working actively on 5S and kaizen with proper skills and knowledge. Ask WIT members on 5S and roles and responsibility of WIT and if they cannot answer, do not mark more than 3 (Fairly implemented) even the staff seems committed.
13.2	WIT's activities are carried out according schedule	Check WIT action plan or meeting schedules, and minutes of meeting whether the planed schedule and actual activities are matching. If WIT does not have written schedule for meeting, monitoring and other general WIT activities, do not mark more than 3 (Fairly implemented)
13.3	Evidence of regular WIT and QIT meeting	Check Minutes of meeting of WIT-QIT meeting and its period. If the meeting is not held more than 3 month, do not mark more than 3 (Fairly implemented)

14	**Empowerment of hospital staff through 5S, KAIZEN, TQM** Opportunity and environment for empowerment for hospital staff by themselves	
14.1	Evidence of learning opportunity for 5S, KAIZEN, TQM	Check whether staff working in the section are getting learning opportunities such as seminar, workshop and refresher training on 5S-KAIZEN-TQM, or not
14.2	Seminar and Training on 5S-KAIZEN-TQM are conducted for WIT members	Observe and check whether staff working in the section are conducted internal seminar, workshop and refresher training on 5S-KAIZEN-TQM, or not in the past 6 months

VIII-3…KAIZEN Process Checklist

KAIZEN Process Checklist

Hospital	
Department/Section/Unit/Ward	
Date of Monitoring	
Member of KAIZEN Team	
QIT facilitator	
Last date of meeting with QIT for consultation	

1. Theme of KAIZEN

2. Situation analysis

Current data table	Pareto chart	Target set
☐ Made correctly	☐ Made correctly	☐ Set
☐ Made but wrongly	☐ Made but wrongly	☐ ……
☐ Not made	☐ Not made	☐ Not set

3. Root cause analysis

Fishbone diagram
☐ Developed correctly and root causes are identified
☐ Developed wrongly and root causes are not well identified
☐ Not done

4. Counter measure identification

Tree diagram	Matrix diagram	Feasibility check
☐ Made correctly	☐ Made correctly	☐ Done correctly
☐ Made but wrongly	☐ Made but wrongly	☐ Done but wrongly
☐ Not made	☐ Not made	☐ Not done

5. Implementation of counter measure

Implementation	Progress check
☐ All identified measures implemented	☐ Checklist developed and used
☐ Identified measures partially implemented	☐ Progress is not check
☐ Not implemented	

6. Effectiveness check

Comparison data table	Comparison Pareto chart	Target achievement
☐ Made correctly	☐ Made correctly	☐ Achieved
☐ Made but wrongly	☐ Made but wrongly	☐ ……
☐ Not made	☐ Not made	☐ Not achieved

7. Standardization of effective measures

Explain the Standardization methods:

8. Suggestion

1)

VIII-4…5S-KAIZEN-TQM Consultation Visit Interview Sheet

5S-KAIZEN-TQM Consultation Visit Interview sheet

Hospital :_____, Consultant: _____ Date: _____

Questions to Quality improvement team			
	Questions	**Brief explanation**	**Information obtained**
1	What kind of administrative/financial support has been given to QIT?		
2	How is the position of QIT in the hospital organization?	Ask working relationship with HMT and what kinds of power/authorization are given to QIT	
3	How often internal evaluation is conducted?	Ask frequency of evaluation and method of evaluation (Checklist, coaching, pictorial records etc.)	▫Once a week ▫Once a month ▫Once in quarter ▫Bi-annual ▫Other ……
4	Does hospital following the action plan, which was developed at TOT?	Ask progress of implementation of action plan. If delay of implementation is reported, ask the reason of delay.	▫ YES ▫ NO If no Why?_____
5	When QIT is established or reorganized? What is the reason of reorganization?	Ask month and year of the establishment of QIT	Year_____ month_____ ☐ Estabilshed ▫Reorganized Reason of reorganization …….. …… ……
6	Does QIT have office and equipment?		☐Yes ☐No
7	How many members are in QIT and what is the composition of QIT?	Total number of QIT members and its composition should be asked for checking the balance of composition.	Total numbers: …… Composition: Dr. | Nr. | Pharm | Lab | X-ray | Admin

Questions to Quality improvement team			
	Questions	**Brief explanation**	**Information obtained**
8	How is the position of QIT in the hospital organization?	Ask working relationship with HMT and what kinds of power/authorization are given to QIT	
9	How many staffs are trained on 5S out of xx staff?	Target group and number of people trained on 5S-KAIZEN-TQM concepts and method should be asked. Please do not forget to ask total number of staff	Number of staff trained on 5S _____ Total number of staff _____
10	How many areas are implementing 5S out of xx department/section?	Ask department and sections are implementing 5S-KAIZEN. It is also important to ask establishment of WIT. Please do not forget to ask total number of department/section.	Number of implementing areas _____ Total number of departments/sections _____
11	What are the roles and responsibilities of QIT in the hospital? (Check existing of written QIT roles and responsibilities)	Ask briefly about main roles and responsibilities of QIT. If it is in written format, ask them to give a copy	
12	How QIT is communicating with WIT and HMT?	Ask how WIT and QIT or QIT and HMT are communicating in what method (meeting, memorandum, e-mail group etc.)	□Once a week □Once a month □Once in quarter □Bi-annual □Other ……
13	How often QIT meeting is conducted?	Ask frequency of QIT meeting and how minute of meeting is recorded and kept	□Once a week □Once a month □Once in quarter □Bi-annual □Other ……
14	How often QIT is conducting monitoring to departments/sections?	Ask frequency of monitoring and method of monitoring (Checklist, coaching, pictorial records etc.)	□Once a week □Once a month □Once in quarter □Bi-annual □Other ……
15	How often internal evaluation is conducted?	Ask frequency of evaluation and method of evaluation (Checklist, coaching, pictorial records etc.)	□Once a week □Once a month □Once in quarter □Bi-annual □Other ……
16	What kind of challenges QIT is facing regarding the implementation of 5S-KAIZEN?	Ask any difficulties QIT is facing regarding the implementation of 5S-KAIZEN. It is also important to ask countermeasures they are taking to solve those issues.	

Questions to Quality improvement team			
	Questions	**Brief explanation**	**Information obtained**
17	What are other QI programs implemented in this hospital?		
Questions to Quality improvement team and Hospitals management team with KAIZEN Implementation			
18	How many departments / sections are practicing KAIZEN at the moment?	Ask department and sections are implementing KAIZEN.	Number of implementing areas _____ Total number of departments/sections _____
19	How many staffs are trained on KAIZEN out of xx staff?	Target group and number of people trained on KAIZEN method should be asked. Please do not forget to ask total number of staff	Number of staff trained on KAIZEN _____ Total number of staff _____
20	What are the positive changes from KAIZEN activities?		
21	What are challenges of KAIZEN implementation?		

IX…References

Chambers, R. 1997. "Whose Reality Counts?: Putting the First Last." *Intermediate Technology.*

Counte, M. A. and S. Meurer, 2001 "Issues in the assessment of continuous quality improvement implementation in health care organizations". *International Journal for Quality in Health Care*, Vol. no. 13, pp. 197-207.

De Geyndt, W., 1995, Managing the Quality of Health Care in Developing Countries, The International Bank for Reconstruction and Development/ The World Bank, Washington D.C.

Dale G. Barrie, 1999, Managing Quality Third Edition, Blackwell publishers Ltd.

Glynn W J, Barnes J G, 2006, Understanding Services management, Eastern Economy Edition

Grant, R.M., R. Shani and R. Krishnan, 1994, 'TQM's challenge to management theory and practice', *Sloan Management Review,* vol. no. 43, pp. 25-35

Hirano, H. and B. Talbot, 1995, 5 pillars of the visual work place, Productivity Press, Portland

Hasegawa, T. 2003, Strategic Hospital management, Igakushoin (ISBN 4260240730), Tokyo, Japan

Hosotani, K. 1992, the QC problem solving approach、３A Cooperation, Japan

Imai, M. 1997, Gemba Kaizen, A Commmonsense, Low-cost Approach to management. McGrow-Hill.

Imai M. 2001, Gemba Kaizen, A commonsense, low-cost approach to management, Mc-Graw – Hill International Edition

Institute of Medicine, 1990, Medicare- A Strategy for Quality Assurance, vol. I and II, National Academy of Press, Washington D.C.

Jackson, M. 2003. "Systems Thinking: Creative Holism for Managers." John Wiley & Sons, Ltd.

Kaluarachchi P. Samantha, 2009, Organizational Culture and Practices: A case study of a Sri Lanka Public Sector Hospital, Japan Academy of International Business studies P91-116

Kijima. J and Jackson, M. 2007. "Systems Thinking.Holistic Creative Management." Maruzen.

Koeck, C., 1998, 'Time for organizational development in healthcare organizations'', *British Medical Journal*, vol. no. 317, pp. 1267-1268

Kondo Yoshio, 1989, Human Motivation A Key Factor for Management, 3A Cooperation, Japan

Laraia, A.C., P.E E. Moody and R.W. Hall, 1999, The Kaizen Blitz: accelerating breakthroughs in productivity and performance, John Wiley & Sons, Inc., New York

Lave, J. and Wenger, E. 1991. "Situated Learning: Legitimate Peripheral Participation." Cambridge University Press.

Lientz P. Bennet and Rea P. Kathryn, 1995, Project Management for the 21st Century, Academic Press

McLaughlin, C.P. and A.D. Kaluzny, 1999, Continuous Quality Improvement in Health Care, Aspen publishers, Maryland

Moss, F., P Garside and S Dawson, 1998, 'Organizational change: the key to quality improvement', *Quality in Health Care*, vol. no. 7(suppl), pp. S37-44

Nayatani Y. 1995, The Seven New Qc Tools: *Practical Applications for Managers* 3A Cooperation

Niven, P.R., 2002, Balanced Scorecard step by step: maximizing performance and maintaining results, John Wiley & Sons, Inc., New York

Nonaka. I. , Konno. N. 1998. "The concept of "Ba": Building foundation for Knowledge Creation." California Management Review Vol 40, No.3.

Patrick, C., 2000, How Kaizen developed…and developed…and develops, *In* Colenso, M., editor. Kazen strategies for improving team performance, Pearson Education, London. 23-40

Preker, A.S. and A.L. Harding (eds), 2003, Innovations in health service delivery: the corporatization of public hospitals, World Bank, Washington, D.C.

Preston L, Houser, Mizuno Katsuhiko,1992 INVITATION TO TEA GARDENS,SUIKO BOOKS、Kyoto Culture Enclosed, Kyoto

QC Circle Headquarters, JUSE, 1980, Fundamentals of QC Circles, JUSE Press, Ltd. Japan

QC Circle Headquarters, JUSE, 1985, How to Operate QC Circles activities, JUSE Press, Ltd. Japan

Shortell, S.M., D.Z.Levin, J.L. O'Brien et al, 1995, 'Assessing the evidence of CQI: is the glass half empty or half full', *Hospital and Health Services Administration,* vol. no. 40, pp.4-24

Silver. 2007. "Social Exclusion: Comparative Analysis of Europe and Middle East Youth" Middle East Youth Initiative Working Paper. p.15.

Smith., 2002, 'Relationship between quality, safety and organizational behaviour', *Quality and Safety in Health Care*, vol. no. 11, pp. 98-100

Toyota Group TQM Committee QC Circle Subcommittee, 2008, QC Circle Leader's Guidebook for Level Identification, *How to get out of Zone D or C*, JUSE Press, Ltd. Japan

Wellington, P., 2000, Instant Kaizen-what it is and how it works. *In* Colenso, M., editor. Kazen strategies for improving team performance, Pearson Education, London. 3-22

Witanachchi, N., W. Karandagoda, and Y. Handa, 2004, A performance improvement at a public hospital in Sri Lanka: an introduction, *Journal of Health Organization and Management*, Vol.18., No.5, 361-369, 2004


JICA