Summer Training

- Compliance to international patient safety goals-1-year 2018 and 2019: A study of BLK Hospital
- Lean Six Sigma yellow belt

By

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Sincerely,

Suman Pattnaik

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ABBREVIATIONS

ICU - Intensive Care Unit

IPD - Inpatient Department

IPSG - International Patient Safety Goal

JCI - Joint Commission International

LASA - Look Alike Sound Alike

ME - Measurable Element

MRD - Medical Record Department

OT - Operation Theatre

WHO - World Health Organization

PART 1

COMPLIANCE TO INTERNATIONAL PATIENT SAFETY GOALS-1 YEAR 2018 AND 2019: A STUDY OF BLK HOSPITAL

COMPLIANCE TO INTERNATIONAL PATIENT SAFETY GOALS-1 YEAR 2018 AND 2019: A STUDY OF BLK HOSPITAL

1. INTRODUCTION:

International patient safety goal was first developed and introduced by Joint Commission International (JCI). Joint Commission International is non-profit accreditation organization that is headquartered in United States. The organization upgrades its accreditation standards support and extends patient safety goals to the healthcare centres. The JCI standards are developed in collaboration with JCI and other organization that are expert in quality and safety.

International patient safety goals are standards that should be implemented in all hospitals under all international hospital standards accredited by JCI.

There are about six international patient safety goals: JCI and WHO conjointly developed and promoted these six international patient safety goals.

(Source: https://www.jointcommissioninternational.org/en/standards/international-patient-safety-goals/**).**

Goal 1: Identity patient correctly: It's a process and procedure developed that address patient identification accuracy.

IPSG-1 helps in identification of the patient before providing treatment or procedure. Usually two identifiers are used: Full name and MRD number. ID bands are provided to the patients when they are admitted to the hospitals with their name and unique ID number. Room number of patient or location should never be used as identifiers.

Goal 2: Improve effective communication: It is a process that is developed and implemented by hospitals to improve the communication effectiveness both verbally or telephonic among caregivers.

Goal 2.1: Result reporting of critical diagnostic test- It is a process that ensure correct reporting of critical diagnostic test.

Goal 2.2: Handover communications – Proper handover communication data is maintained so as to prevent loss of information.

Goal 3: Improve the safety of the high alert medication: It is process that is developed and implemented by the hospitals to improve the safety of the high alert medication. Medication if used in error with patients can pose harm to the patient. It is very important to check double when handling medication. Medication that are "Look Alike" or "Sound Alike" (LASA) pose a greater threat of adverse event. For such scenario, TALL Man lettering (A typographic technique) is used and labelled as "Name Alert".

Goal 3.1: Concentrated Electrolyte – It is a process that is developed and implemented by hospitals to manage safe use of the concentrated electrolyte. Concentrated electrolyte isn't stored in the patient care units. They may be allowed if they are clearly labelled and permitted by policy.

Goal 4: Ensure correct site, procedure, correct patient surgery: It is a process that is developed and implemented by the hospitals to ensure that correct site, correct procedure and correct patient surgery. A preoperative verification is done of the correct site, procedure and patient by correctly completing the informed consent form and relevant documents.

Goal 4.1: A time out is held before the administration of anaesthesia or before the start of the invasive procedure.

Goal 5: Reduce Risk of Healthcare- Associates Infections: To reduce the risk of hospital associate's infections hospital implements evidence-based hand hygiene guidelines. They are implemented in all hospital area.

Goal 6: Reduces the Risk of Patient harm resulting from fall: It is a process that is developed and implemented by hospital to reduce the risk of patient harm from fall.

Physician should screen all patient and categorise them if they are "FALL RISK". It is documented in the physician history and physical form completed by nurse assessment.

1.1 JCI SCORING GUIDELINES:

According to JCI scoring guidelines a ME (Measurable Element) score is recorded which is the compliance percentage met or not.

The compliance percentage and the ME (Measurable Element) score guidelines are given below.

COMPLIANCE PERCENTAGE	MEASURABLE ELEMENT
90%- 100%	FULLY MET
50%- 89%	PARTIALLY MET
LESS THAN 50%	NOT MET

Table 1: JCI scoring guidelines for compliance to IPSG

(Source: Joint Commission International Accreditation Standards for Hospitals, 6th Edition)

1.2 INTERNATIONAL PATIENT SAFETY GOAL -1:

IDENTIFY PATIENTS CORRECTLY:

It's a process and procedure developed that address patient identification accuracy.

IPSG-1 helps in identification of the patients and have colour coded system for the identification. ID bands are provided to the patients when they are admitted to the hospitals with their name and unique ID number.

In healthcare industry, failure in identification can cause:

- Medication error
- Blood transfusion error
- Error in Testing
- Procedure done in wrong person
- Infant discharged to wrong families.

Patients that are covered in the policies:

All inpatients, all patient in treatment in emergency department, day care patients, patients undergoing dialysis, endoscopy, radiotherapy, minor OT etc.

Patient identifiers used are two in number, not including patient's room or location to improve the patient identification accuracy.

At least two ways are used in order to identify a patient when:

– Medications are administered. Patient with same last name can cause confusion while medication is administered therefore identification of patient before treatment is must.

– Providing blood and blood products. Giving wrong blood type to wrong patient can lead to fatality.

– Collecting samples of blood. To carry out accurate investigation it is important to identify patient for correct collection of samples of blood.

– Collection of other samples for clinical testing. To carry further investigation correct identification of patient is must.

– Providing procedure or treatment. It is possible that incorrect procedure or treatment is carried out in wrong patient if proper identification of patient is not done.

In BLK hospital two identifiers are written on wrist band of the patients and these bands are colour coded accordingly to the case of the patient and situation. The identifier is also combined with the medical records of the patients.

DEPARTMENT	IDENTIFIER
OPD	Name and MRD number of the patient
IPD	Name and MRD number of the patient.
EMERGENCY	Patient name/Unknown and emergency number till the MRD number is generated.
NEWBORN	Name of mother and date of birth till MRD number is generated

Table 2: Details of department and identifier used

(Source: Quality Handbook, Dr B.L Kapoor Memorial Hospital)

PATIENT IDENTIFICATION BANDS:

BLUE	For all patients	
RED	Patients that are high risk/vulnerable	
YELLOW	Allergies patients	
ORANGE	Diabetic patients	
GREY	Patients that are in emergency, dialysis, endoscopy, minor OT, nuclear medicine Oncology.	

Table 3: Patient Identification Bands

(Source: Quality Handbook, Dr B.L Kapoor Memorial Hospital)

2. LITERATURE REVIEW:

The main purpose of the JCI's IPSG compliance is to ensure and promote patient safety through improvement of compliance percentage. Identifying the problem is important for safe delivery of healthcare. Many researchers such as Rivas Espinosa JG, Verde Flota EEJ, Ramirez- Villegas RM, Guerra- Escamilla LM, Ramirez -Espinosa L have concluded that due to lack of training in nurses in a tertiary level care hospital the compliance to IPSG was only about 72.6 % among 97 nurses. As to a hospital, a patient is the main customer it is very important that the prime aim of the hospital should be patient safety. According to a study conducted by Smita Saxena the compliance to IPSG of LLH hospital Mussafah in United Arab Emirates was noted to be 85% after two and half month observation in inpatient ward, ICU, emergency department and radiology department.

Ananya R, Kamath Sagarika, Pati Ashalata and Sharma Amrita in their study conducted from 3rd may 2017 to 15th June 2017 with sample size of about 306 staff showed a result of overall compliance were about highest among doctors with 72% followed by nurses with 69% who are followed by paramedics with 68%. Noncompliance among staffs was due to lack of knowledge or extra work load which lead to reduce the ease of implementation. Noncompliance in doctors and paramedical staffs is due to lack of trainings.

Failure to identify patients can occur due to incomplete practising of two identifiers, new staff and lack of trainings. Another study conducted in 2014 and 2015 in a private hospital of Malaysia. The compliance to IPSG-1 was decreased from 2014 to 2015 was due to increased new number of staffs and incomplete practising of the two identifiers.

3. RATIONALE:

This study shows the significance of IPSG-1 in a hospital and identifies the factors leading to noncompliance which gives a further scope of improvement in the relevant areas. The study compares all the parameters of IPSG-1 for the year 2018 and 2019 ensuring patient safety and further strengthening hospital standards of patient satisfaction.

Identification of patient correctly is a vital factor to ensure patient safety. Failure to identify patient correctly can comprise patient safety. Incorrect identification of the patient can occur at any time- when the patient is unconscious, sedated or disoriented. Therefore IPSG-1 is very important in order to correctly identify patient and match the treatment for whom it is intended to be given.

In healthcare industry, failure in identification can cause medication error, blood transfusion error, error in testing, procedure done in wrong person, infant discharged to wrong families. These can only be avoided if the hospitals follow IPSG-1 successfully.

4. RESEARCH QUESTION:

What is the percentage of compliance to IPSG-1 in year 2018 and 2019 in BLK Hospital?

5. OBJECTIVES:

i) To examine the compliance to IPSG-1 in 2018 and IPSG-1 in 2019 in BLK hospital.

ii) To identify possible reasons for non-compliance

6. METHODOLOGY:

A) Study area: BLK hospital
B) Study design: Descriptive study of report of compliance to IPSG-1 2018 and IPSG-1 2019 of BLK hospital
C) Sample collection: Secondary data from research study conducted in 2018 and 2019. (Source: Closed inpatient files)
D) Tool used: Checklist.
E) Inclusion criteria: IPD patient
F) Exclusion criteria: Emergency, ICU patients and day-care patient.

7. DATA ASSESSMENT:

In both years 2018 and 2019 from closed inpatient files all parameters are noted.

INITIAL ASSESSMENT FORM: It is the primary survey of the patient and is a critical component of prehospital care. In year 2018 the compliance of initial assessment is noted to be 96.7 %. In 2019 the compliance of initial assessment is 92.6%.

DISCHARGE SUMMARY: A healthcare professional prepares a clinical report at the end of the hospital stay of a patient or treatment. In both 2018 and 2019 the compliance rate is 100 % for discharge summary.

PROGRESS NOTE: They are the part of medical record details where a clinical status or achievement of the patient is documented by a healthcare professional. In year 2018 the compliance of progress note was about 88.7% and year 2019 the rate was about 81.3%.

NURSING ASSESSMENT: A registered nurse gathers information such as the patient physiological, psychological and sociological status. In year 2018 compliance of nursing assessment was 91.3 % and in year 2019 the compliance was about 97.3 %.

DRUG CHART: Drugs that are administered to the patients in a healthcare facility are recorded by a healthcare professional in a legal record. In year 2018

the compliance of drug chart was about 96.7% and year 2019 the rate was about 94.6%.

TRACK SHEET: It is the everyday track report of the patient. It includes medication schedule and physician details. In year 2018 the compliance of track sheet is about 97.3% and in 2019 it has reduced to 80 %.

PATIENT FAMILY EDUCATION: A detail record of patient and family education. In year 2018 the compliance rate was about 96.7% and in year 2019 it was about 72%.

PATIENT FAMILY COMMUNICATION FORM: Sometimes it may be necessary to contact the family of the patient where the hospital may want to communicated lab reports, treatment plan and billing report. Therefore, a patient family communication form is filled for this purpose. In year 2018, the compliance was about 95.3% and in year 2019 it was 70%.

CONSENT FORM: It is the patient consent to the treatment procedure, investigations or drug trial. In year 2018, the compliance rate was about 96% and in year 2019 the rate was about 94.7%.

IPSG-1 PARAMETERS	**YEAR 2018(%)**	**YEAR 2019(%)**
INITIAL ASSESSMENT	96.7	92.6
DISCHARGE SUMMARY	100	100
PROGRESS NOTE	88.7	81.3
NURSING ASSESSMENT	91.3	97.3
DRUG CHART	96.7	94.6
TRACK SHEET	97.3	80
PATIENT FAMILY EDUCATION	96.7	72
PATIENT FAMILY COMMUNICATION FORM	95.3	70
CONSENT FORM	96	94.7

Table 4: Compliance percentage to IPSG-1 parameters in year 2018 and 2019.

A graph is plotted taking X axis as parameters of IPSG-1 of year 2018 and year 2019 and Y axis taken is the compliance percentage.

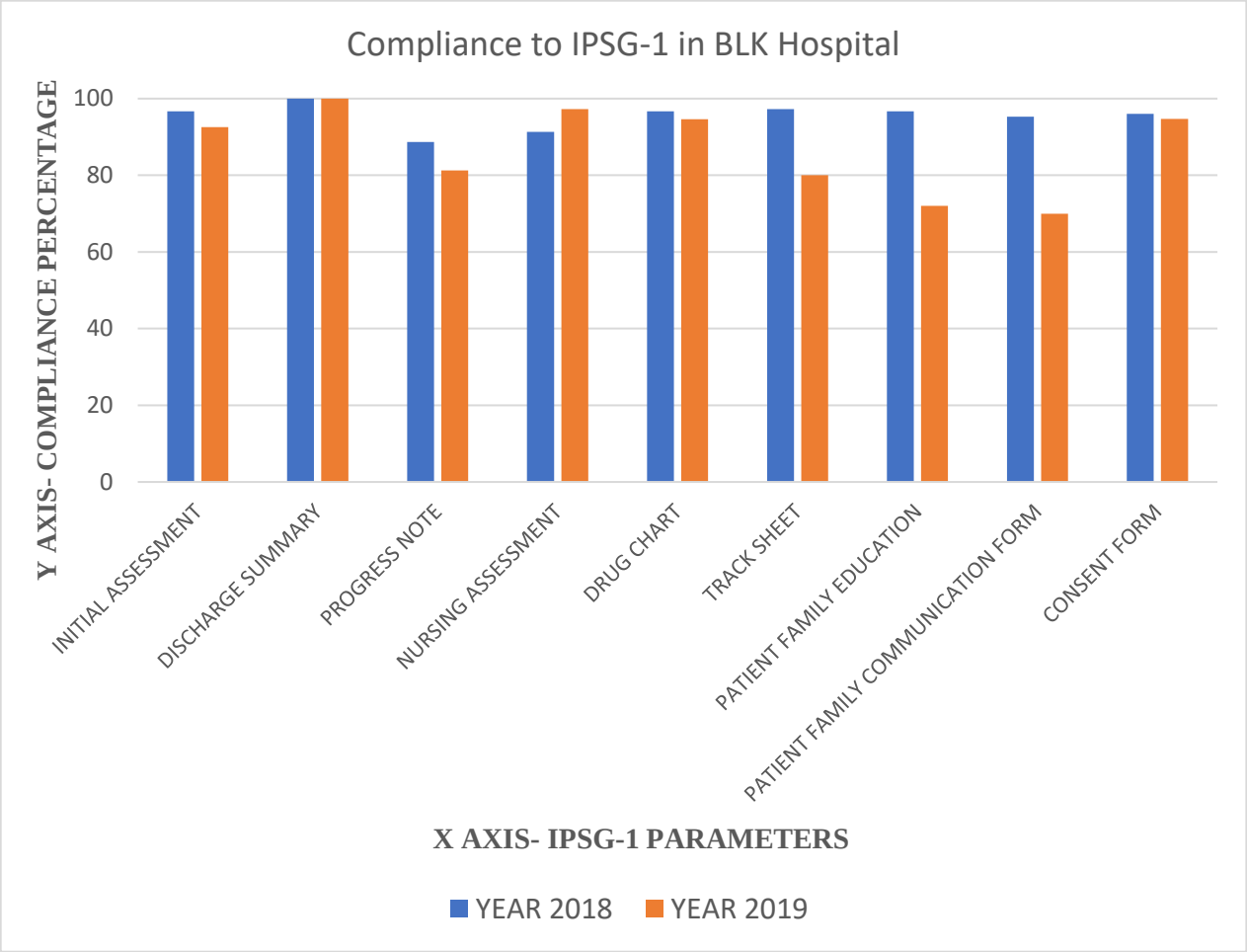

Figure 1: Compliance to IPSG-1 in BLK Hospital in year 2018 and 2019

8. **INTERPRETATION:** The graph above (figure 1) shows compliance to IPSG-1 in both year 2018 and 2019 in inpatient wards. It shows that the compliance has decrease in all except for discharge summary and nursing assessment.
   Initial assessment, progress note, drug chart, track sheet, patient family education, patient family communication form and consent form the compliance has decreased from year 2018 to 2019.

9. FACTORS LEADING TO NONCOMPLIANCE:

In 2018:

Most noncompliance was seen in- progress note and nursing assessment

Possible reason were nurses who were new and still going through their training.

In 2019:

Most noncompliance is seen in – patient family communication form, track sheet and patient family education form.

Possible reason uneven tearing of the label or of faded ink on the printed id band of the patients.

Untrained nurse forgetting to paste patient id number on the doctors note. Generation of MRD number is delayed.

10. SUGGESTIONS:

1) Proper training of new staffs as well as existing staffs to improve the identification of patient correctly.
2) Avoid any uneven tearing of labels or faded ink on the id band of the patient.
3) Avoid any misprint of labels and ID band.
4) Regular auditing to check any non-compliance
5) In case of noncompliance, immediate reporting of the case to the higher authorities
6) Spreading awareness and importance of the patient safety goals to every staffs.
7) Avoid delay in generation of MRD number

11. CONCLUSION:

From the above project it can be seen how it is very important to follow guideline to IPSG-1 otherwise result in decrease in compliance to IPSG-1. Proper identification of the patient is very essential for patient safety. Proper training and new and improved strategies should be implemented to prevent any kind of mis-identification. Hospitals should take extra care when handling new-borns and comatose patients. Taking preventive measure can improve the compliance to greater extent.

12. ANNEXURE:

13. REFERENCES:

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PART 2

LEAN SIX SIGMA YELLOW BELT

LEAN SIX SIGMA YELLOW BELT

1. **NAME OF THE COURSE**: LEAN SIX SIGMA YELLOW BELT BY UNIVERSITY SYSTEM OF GEORGIA

2. **COURSE DESCRIPTION**: Six Sigma is taught everywhere nationally as well as internationally. These skills can improve business performance, processes and quality. This course provides the principles and tools of lean six sigma. This course covers the introductory level of lean six sigma.

3. OBJECTIVES OF THE COURSE: The objective of the course is to teach employees in the organization about:

- How to reduce waste

-Enhance the productivity of the organization

-Detect errors and its prevention

-Ensure high productivity at low cost

-How to achieve customer satisfaction at lower cost.

4. **COURSE CONTENT**: This course consists of 4 sub-courses:

A) Six Sigma Fundamentals

-Six sigma principles and foundation.

(Origin of Six Sigma, purpose of six sigma, roles and responsibilities)

-Quality tools and metrics:

(Types of quality tools and six sigma metrics used through the DMAIC process- pareto chart, cause and effect diagram, flow chart and process mapping, check sheet, scatter diagram and histogram)

-Team basic:

(Teamwork is very essential component for improvement in the productivity of the organization, importance of teamwork, types of team, brainstorming, team decision making and agendas minutes)

-Lean foundation and principles:

(Purposes of lean, value stream mapping, JIT & KanBan and pokayoke)

B) Six Sigma Tools for Define and Measure

- Project Identification:
  (Introduces the process of project development and selection, voice of the customer, critical to satisfaction, project selection, SWOT analysis, SIPOC)
- Project Management Basic
  (Basics of the project- defining the problem statement, developing a project plan, brainstorming and diagramming tool)
- Basic Statistics
  - mean
  - median
  - mode. Variance and standard deviation
- Data collection:
  (Second part of Define is data collection techniques)

C) Six Sigma Tools for Analyse

- Measurement system analysis
- Process analysis tools:
  (Introduces how to improve the process, process analysis tools,5s)
- Root cause analysis:
  (5 whys and process mapping)
- Data analysis:
  (Characteristic of probability distribution, normal distribution, binomial distribution)

D) Six Sigma Tools for Improve and Control:

- Correlation and regression:
  (Dependent and independent variables, types of correlations, the regression equation, use of regression for prediction and regression for six sigma)
- Hypothesis testing:
  (Hypothesis testing basic, types of errors, p value)
- Improvement techniques:
  (Sub optimization, kaizen and kaizen blitz, PDCA, cost of quality)
- Control tools and documentation:
  (Control chart, document management)

5. LEARNING METHODOLOGY USED IN THE COURSE:

1. Video
2. Assignments
3. Peer evaluation assignments

6. KEY LEARNINGS:

Six Sigma: Six Sigma is a quality measurement concept and a method that prime focuses on measuring defects, reducing variations as well as improves products quality, processes and services.

Lean: To increase customer value and reduce waste.

Lean and Six Sigma Tools:

1. Eliminate waste and excess cost
2. Reduce variation and defects
3. Improve our processes and customer experience

Six sigma methodology:

DMAIC- D is for Define

M is for Measure

A is for Analyse

I is for Improve

C is for Control

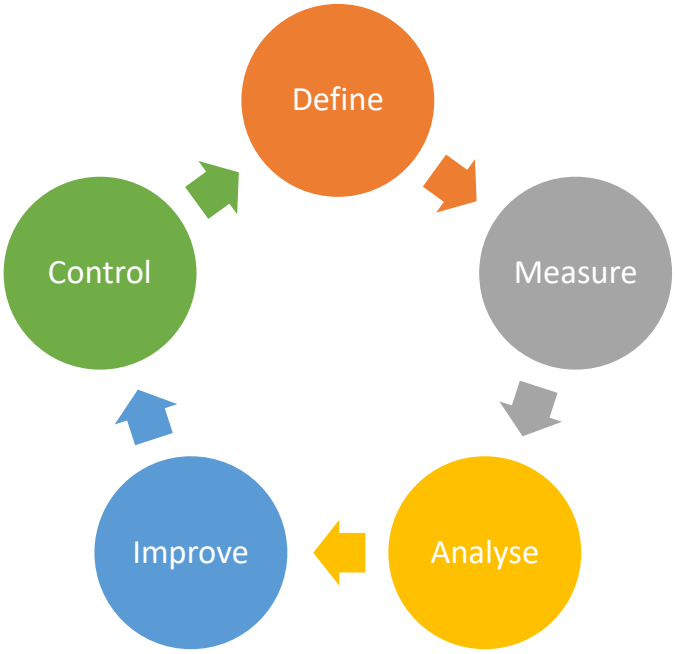

Figure 6: Six Sigma Methodology

All six-sigma project the DMAIC steps.

6.1 Step 1: Define the problem.

First identify the problem. What problem the organization is facing and how it is affecting the company.

The problem is first defined in quantifiable measure as well as the seriousness of the problem that is affecting the company.

A goal statement should be formed in measurable terms and time bound to achieve.

1. A SIPOC (Supplier, Input, Process, Output and Customer) diagram which gives an overview of the process that is to be analysed to find out the problem.

2. Process map is outlined. Process map is a picture of sequence of steps in a process by symbols.

6.2 Step 2: Measure the problem

The extent of the problem should be measured. For that the current state of the problem is need to be examined to know the performance.

6.2.1 Brainstorming: It's a method to generate ideas. Quantity matters not quality.

They are used to identity root cause, problem and corrective action.

Types:

- Freewheeling (Most common): Everyone shouts out ideas and one or two scribes records.
- Round robin: Around the table and turns are taken, thus can encourage some who hesitate to participate.
- Slip method: Ideas are written down and passed to scribe. This helps those who do not want to speak up.

6.2.2 SWOT: **STRENGTH, WEAKNESS, OPPORTUNITIES AND THREAT**.

Swot analysis is a part of business strategy and tool which involves the identification of strength, weakness, opportunities and threats of the organization.

Internal environment which includes Strength and Weakness of the organization.

External environment which includes Opportunities and threats by the external environment to the organization.

Strength- Organization characteristic that gives it power or advantages over the competitors.

Weakness is the characteristics of the organization that makes it disadvantageous to the competitors.

Opportunities: Elements that the organization can exploit and take advantage of.

Threats: Elements that can cause trouble to the company.

6.3 Step 3: Analyse the problem

6.3.1 Pareto charts:

This chart prioritise problem. Its finds defects and prioritise them to check overall improvement

Uses discreet data. It separates the vital few from the trivial many.

80-20 rule: 20 percent of the defects comes from 20 percent of the cause

It contains bar graph as well as line graph together and here the individual values are shown in the descending manner and the cumulative total here is usually represented by a line.

6.3.2 Histogram:

Diagrammatic representation of frequency of the events.

It uses discreet data. A histogram is constructed from a frequency table.

6.3.3 Check sheets:

Simple and quick data tool

It is usually custom designed

No single standard form.

There are three types of checksheets:

1. Recording checksheets
2. Checklists
3. Measles charts: these are actual drawing with marked defects

6.3.4 Cause and effect diagram:

Fishbone diagram or Ishikawa diagram is the other names of cause and effect diagram.

It's a brainstorming tool to identify the possible cause of a problem.

It's a tool which not only helps to identify problem but also categorize and display the reason of the problem.

6 M's used in manufacturing: Measurement, Material, Methods, Management, Machinery, Manpower.

Four P: Policies, Procedure, People and Plant.

6.3.5 Process Analysis tool: Value analysis and 5S

VALUE ANALYSIS:

95% - Non value added, 5% - Value added

Lean = Systematically eliminating waste

8 wastes -T – Transportation

I – Inventory

M – Motion (Operations)

W – Waiting

O – Overproduction

O – Over processing (Rework)

D – Defects/Quality

S – Skills/People

6.3.6) 5S:

5S stands for Sort, Set in Order, Shine, Standard, Sustain

Purpose of 5S:

- Workplace neat and orderly
- Improve working environment
- Increase productivity
- Reduce cost
- Increase safety
- Eliminate waste

SORT: Clearing work area and discarding unnecessary items

SET IN ORDER: Items have designated location and orderly arranged

SHINE: Cleanliness and Workplace appearance

STANDARDIZE: Doing same thing same way and responsibly

SUSTAIN: Maintain improvement always.

6.3.7) 5 WHYS:

Founded by Sakichi Toyoda

It's one of the root cause analysis devices to find the cause and effect relationship of a particular problem.

It's to find the cause by repetitive asking why until the root cause is found.

The questioning doesn't have to exact 5 whys it can be less or more also but usually 5 is generally considered sufficient.

6.4 STEP 4: IMPROVE PHASE:

Improve phase, the main focus of the project to reduce the root cause. Here the mains step is to implement solution. To generate effective solution impact effort matrix can be used which will help to determine which solution will be have best impact with less effort and cost.

6.4.1. IMPACT EFFORT MATRIX:

It's a decision-making tool which helps people to efficiently manage their time.

It's also called action priority matrix. It provides guidance and assistance for the team to implement all the changes.

6.4.2. PDCA: PLAN – DO – CHECK - ACT

Different solutions are explored using PDCA cycle and the best one is selected.

It helps to evaluate the solution and results thus selecting the one which has higher success rate.

PLAN: What need to be changed, steps that need to be taken, the risk of change is to be known, the result is also predicted.

DO: The plan is carried out in small section and the result of the trial is noted.

CHECK: Result is analysed of the trial, improvement is verified and implementation in broader scale is planned.

ACT: Changed are implemented, Standard operating procedure is updated and ensuring everyone working to the standards.

6.5 STEP 5: CONTROL PHASE:

This is the final phase where the focus is on maintaining the improvement that has been gain on implementing the solutions to the problem

Success is measured and a control plan is implemented.

Mostly used in this phase is a control chart.

Project owners keeps a watch on improvement through the control chart.