FAILURE MODE AND EFFECT ANALYSIS LEAN SIX SIGMA APPROACH

PREPARED BY FOAD H K ANLI

DIRECTOR OF QUALITY ASSURANCE PERFORMANCE AND BUSINESS IMPROVEMENT

AMOR HEALTH SERVICES INC. BROWNSVILLE TEXAS

Background of Business

Amor Health Services, Inc. offers primary home care, family care and personal care services. The company offer wide range of services. Who is eligible for the services? Individual and families of all ages that have functional limitation in performing any activities of daily living.

Services offered

Personal Assistant Services include Bathing, Exercising, Feeding, Grooming, Routine Hari/Skin Care, Toileting, Transfer, Walking, Cleaning, Laundry, Meal Preparation, Escort, Shopping, Assistance

With Self Administrated Medications.

Lean Six Sigma Approach

DMAIC

1

Define:

The team has selected high-risk processes/procedures that are those in which failure of some type is most likely to jeopardize safety and health of individuals served by the health care organization, in our study Amor Health Services has selected clients/patients Assessment for improvement. The team selected failure Mode and Effect Analysis technique for improvement.

Measure:

Data has been collected by visiting 500 clients/Patients home to identify opportunity for improving clients/patients health assessment, in our study understanding of client's health conditions as many dimension as possible through sampling, survey, voice of clients/patients and quality function deployment " House of Quality". The team constructed Failure Mode and Effect Analysis Matrix work

- Sheet to evaluate quality care of clients/patients initial health assessment before improvement. The team performed criticality analysis to calculate risk priority
- number
- **RPN** is arithmetic product of SR severity ranking or rating, OR occurrence ranking and DR detection rating which determines criticality of clients/patients health
- assessment, quality care and safety.

- 1- Severity rating by assigning rating 10 extreme affect and most likely and 1 none, no effect.
- 2- Occurrence rating by assigning rating 10 almost certain and 1 never happens.
- 3- Detection rating by assigning rating 10 almost impossible to detect and 1 almost certain.

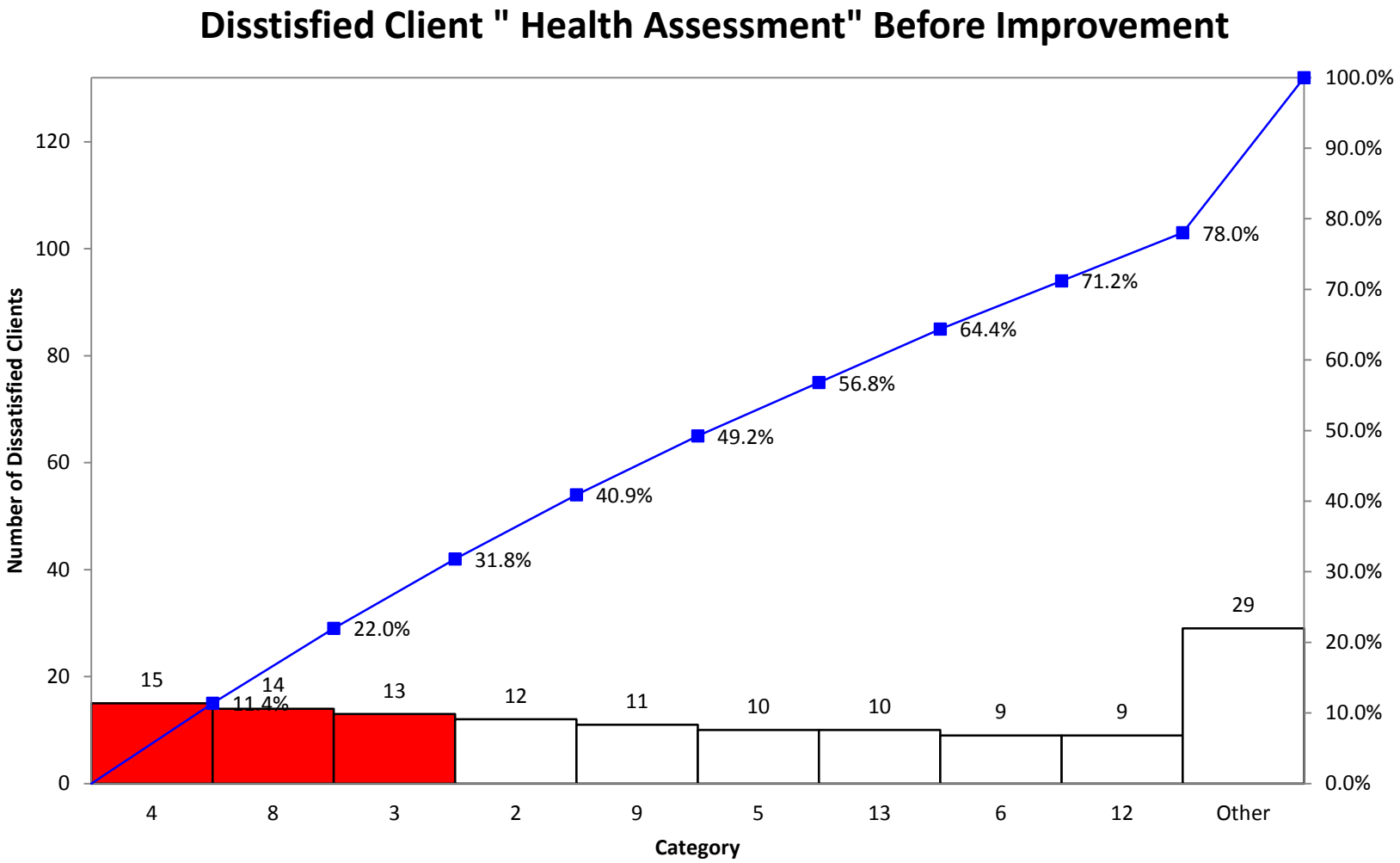
- Risk Priority numbers were calculated for before and after improvement.
- **RPN = SR X OR X DR**
- **Analyze:**
- Affinity Diagram was constructed to show how wide range of ideas and thoughts can be arranged, constructed Cause and effect Analysis Diagram and grouped
- causes in to categories to brain storm the causes.

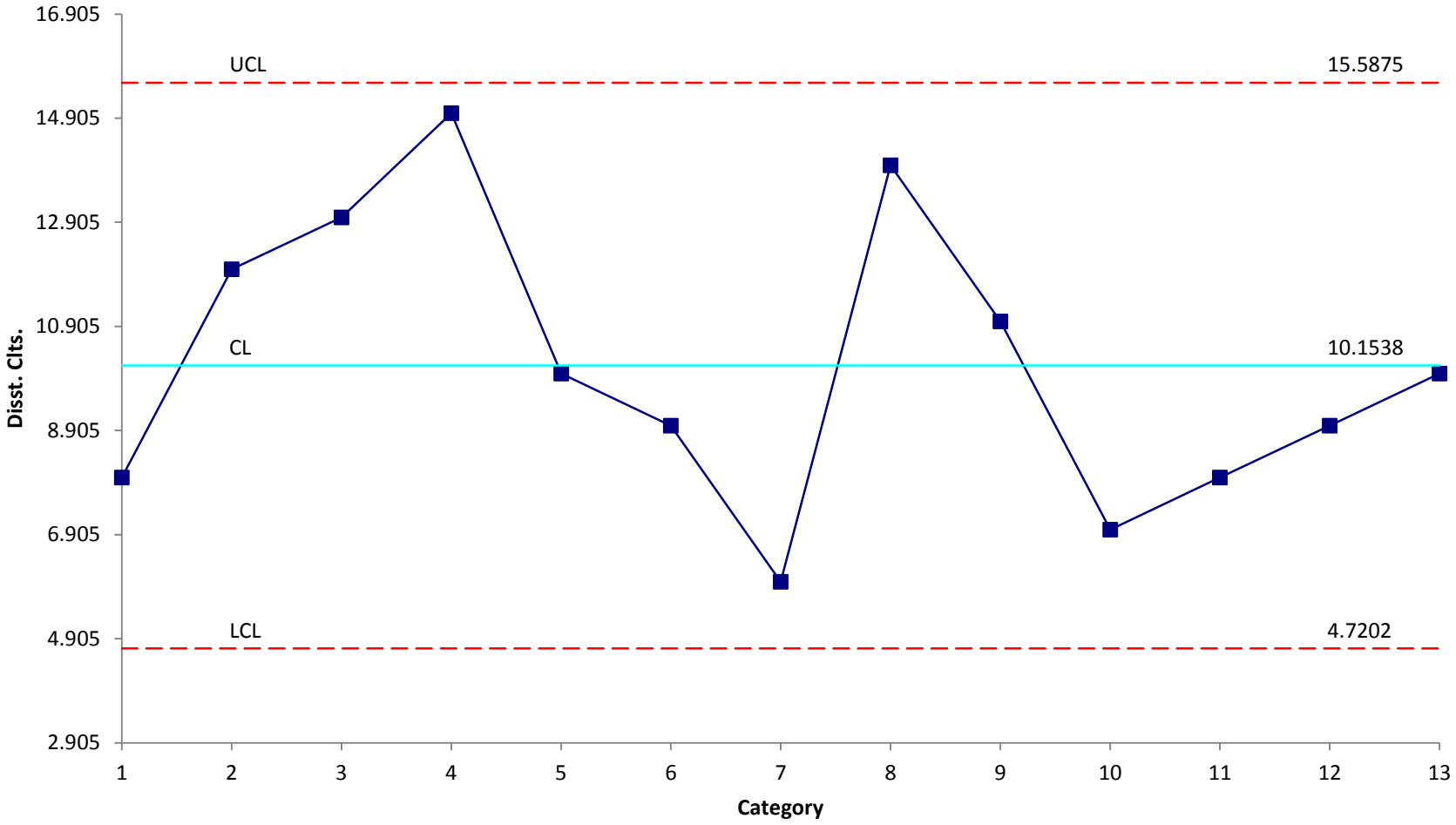
QUALITY INTIAL ASSESSMENT SURVEY FORM, CLIENTS/PATIENT

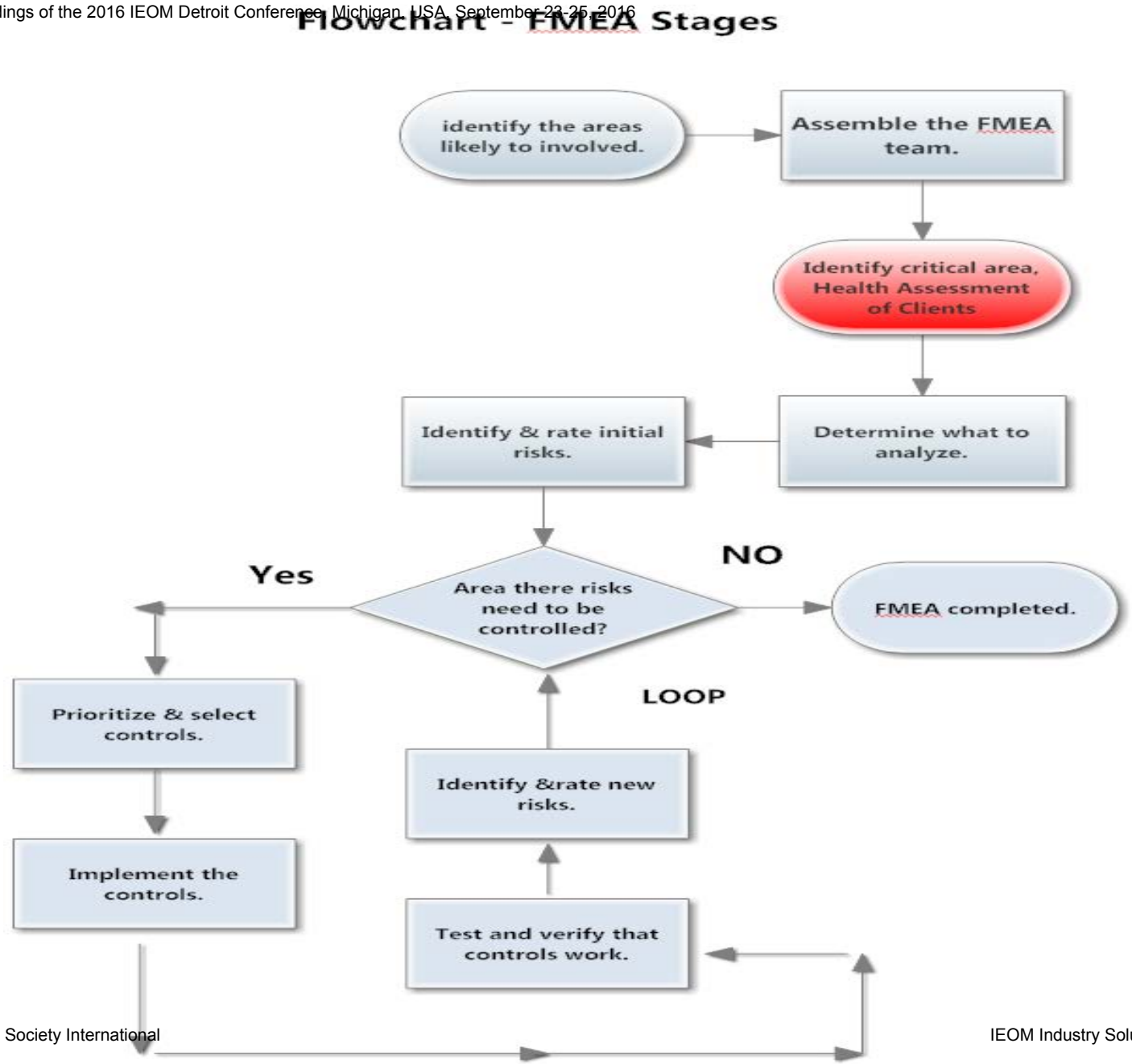
RECORD NUMBER	REVIEW DATE:
1. ARE SERVICES ORDERED?	
2. ARE CONESNT FORMS SIGNED?	
3. IS THE PRACTITIONER STATEMENT SIGNED AND CORRECT?	
4. IS THE PLAN OF CARE RELATED CONSISTENT WITH CLIENT'S CARE?	
5. IS THE AMOUNT OF HOURS CONSISTENT WITH THE CLIEN'S NEEDS	
6. WAS THE INITIAL ASSESSMENT COMPLETED WITHIN THE TIME FRAMES?	
7. IS ALL DEMOGRAPHIC INFORMATION PRESENT?	
8. WAS SERVICE INITIATION DONE WITHIN TIME FRAMES?	
9. WAS ATTENDANT ORIENTED BEFORE OR AT THE TIME OF DELIVERY OF SERVICE?	
10.WERE COMPALINTS DOCUMENTED AS PER POLICY?	
11.WERE DOCUMENT SENT TO CASE WORKER ON A TIMELY MANNER OR CASE MANAGER NOTIFIED?	
12.WAS CLIENT VISITED AS PER SUPERVISOR'S ASSESSMENT?	
13.DID ATTENDANT COMPLETE SERVICE RECORD FORM CORRECTLY?	

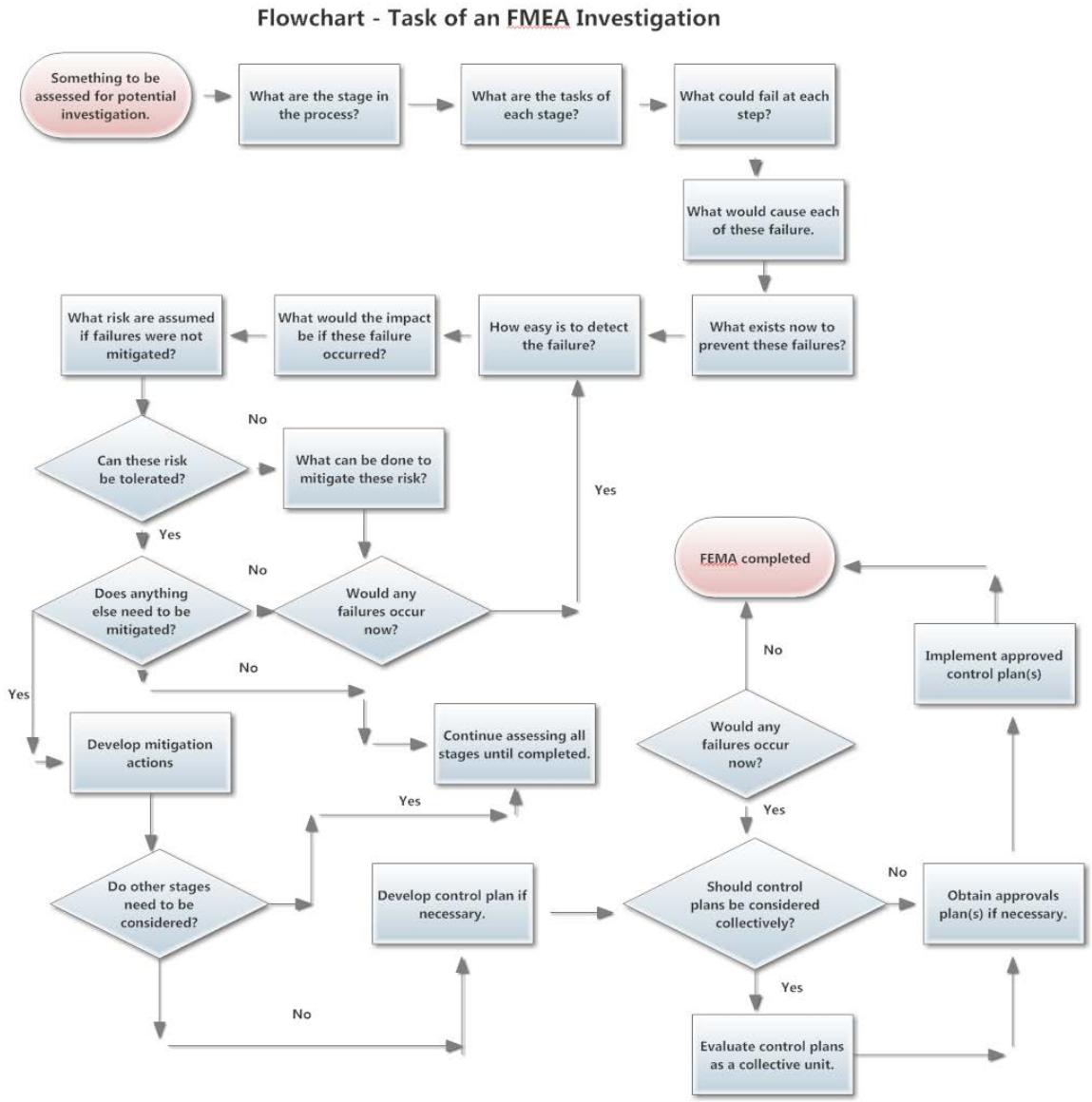
3

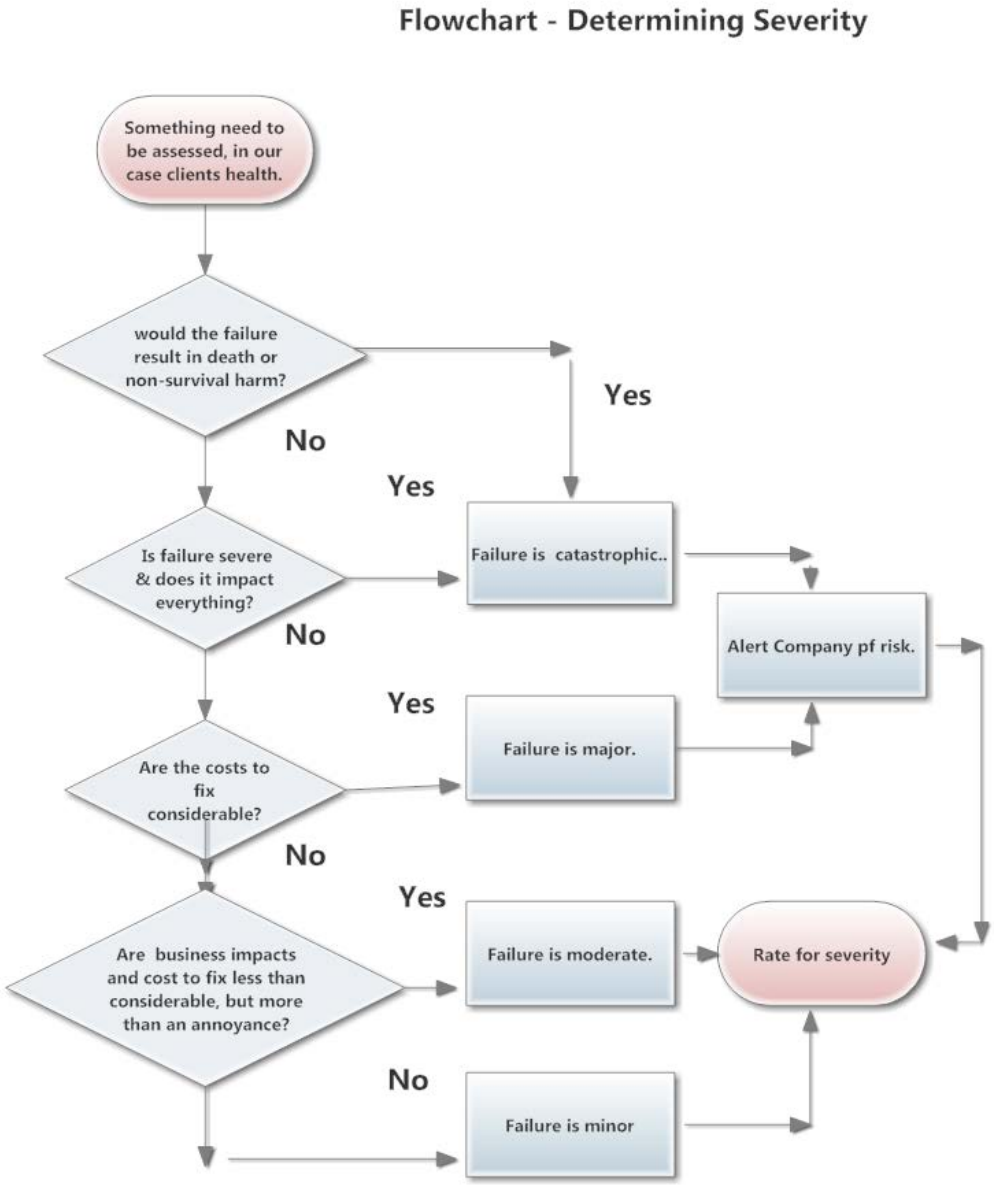
Categories	Survey, Clients Initial Health Assessment, number of Dissatisfied clients Before Improvement	
1	Services not ordered on time.	8
2	Consent forms are not sign.	12
3	Practitioner statements were not signed.	13
4	The plan of care related was not consistent with client's care.	15
5	The amount of hours were not consistent with clients need.	10
6	The initial health assessment was not completed within the time frame.	9
7	Ali the demographic information was not present.	6
8	The service initiation was not within the time frame.	14
9	Attendant was not oriented properly, before or at the time of services delivery.	11
10	Complaints were not documented as per policies and procedures of the company.	7
11	The documents were not sent to the case worker and case manager on time.	8
12	Supervisor did not follow up initial health assessment as per guide line of policies and procedures of the company.	9
13	Attendant did not complete service record forms correctly.	10
Total	Before Improvement	132

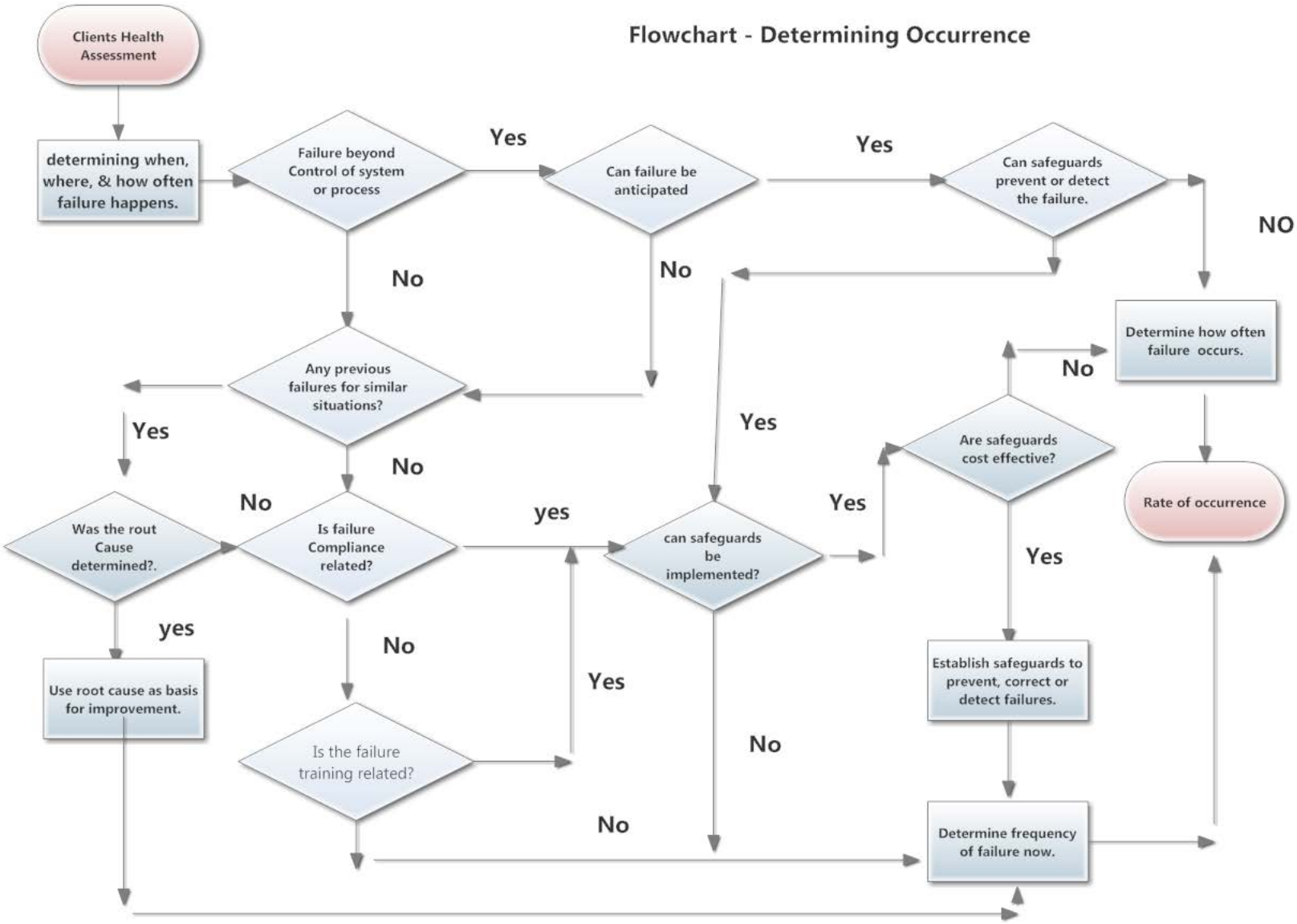


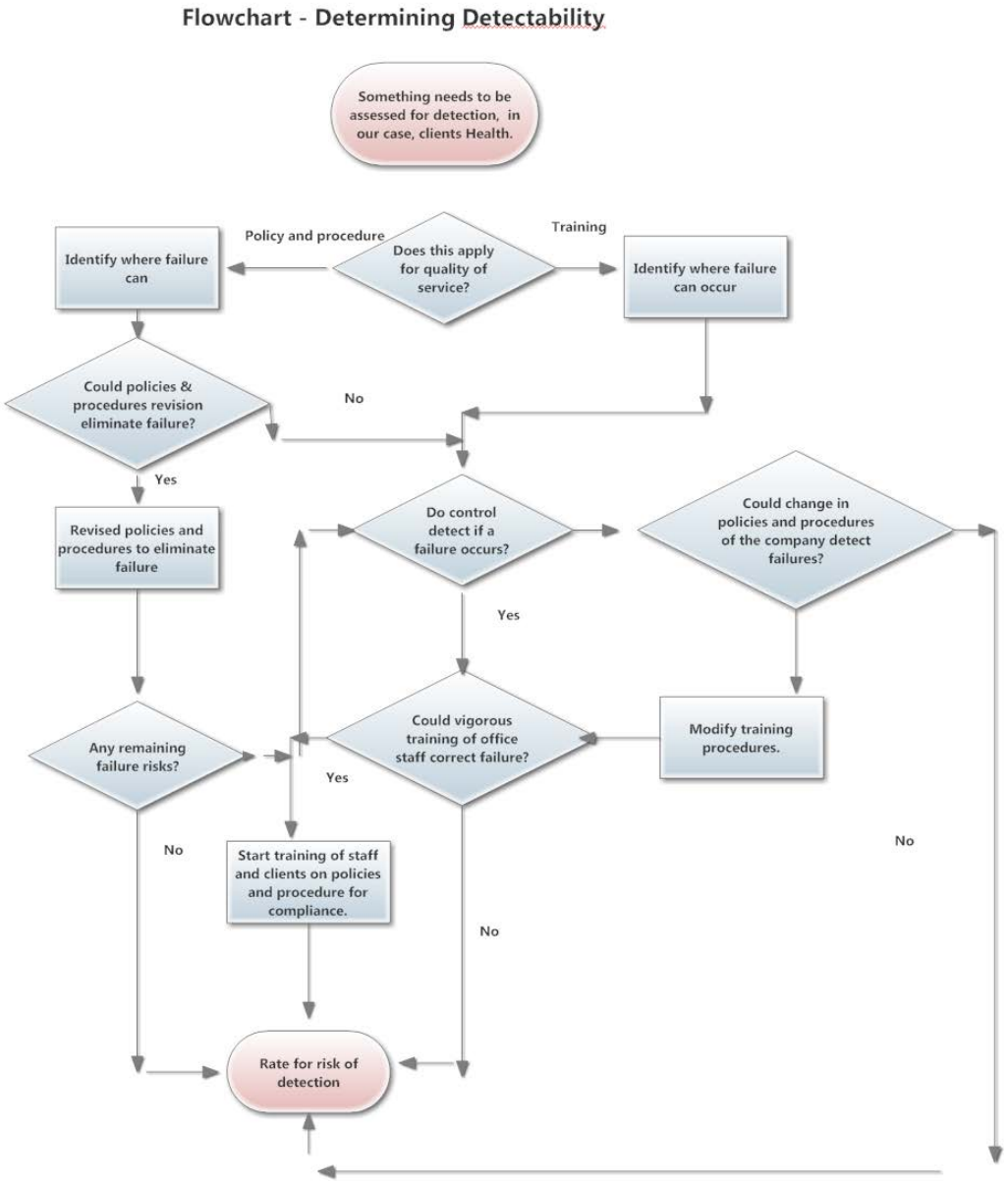



Flowchart - FMEA Stages
identify the areas likely to involved.
Assemble the FMEA team.
Identify critical area, Health Assessment of Clients
Determine what to analyze.
Identify & rate initial risks.
Area there risks need to be controlled?
Yes
NO
FMEA completed.
LOOP
Prioritize & select controls.
Implement the controls.
Identify &rate new risks.
Test and verify that controls work.



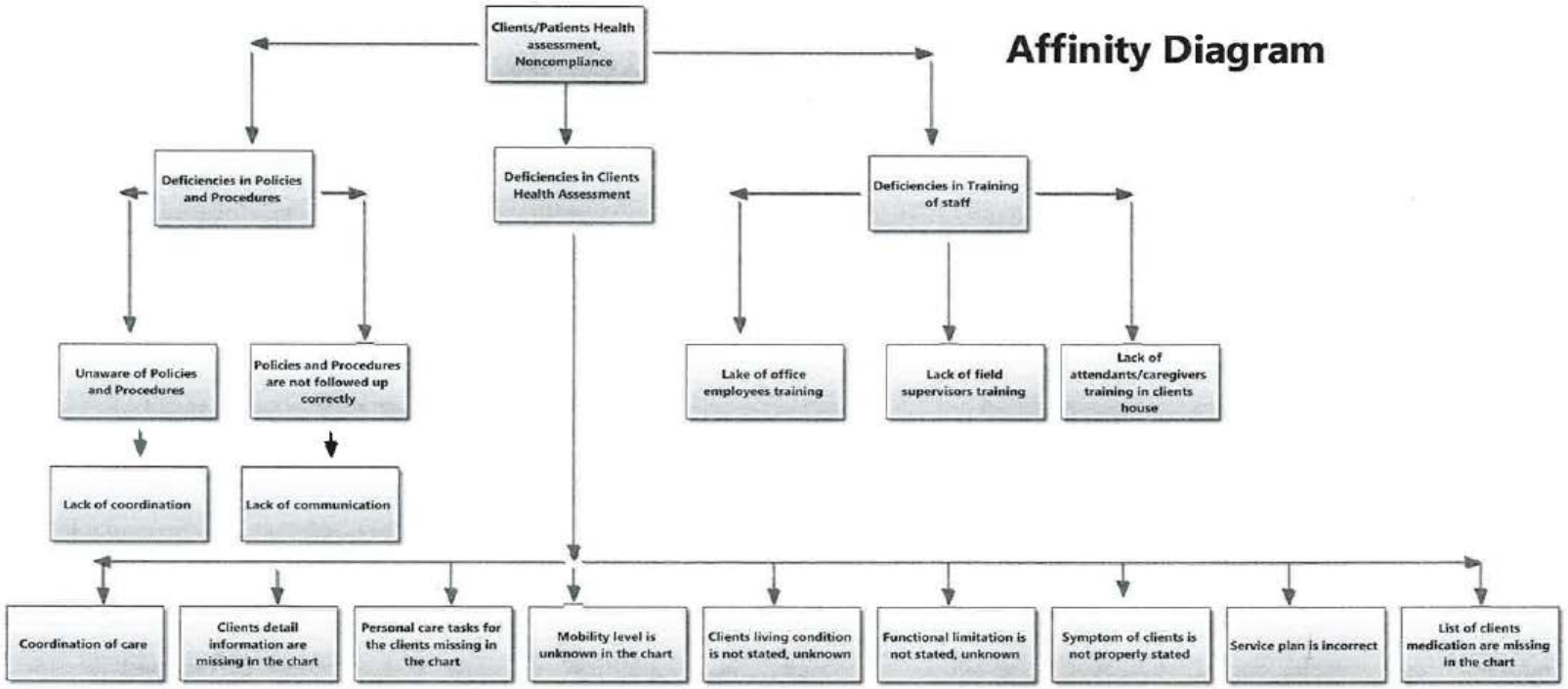



Flowchart - Determining Occurrence
Clients Health Assessment
determining when, where, & how often failure happens.
Failure beyond Control of system or process
Yes
Can failure be anticipated
Yes
Can safeguards prevent or detect the failure.
NO
No
No
Determine how often failure occurs.
No
Any previous failures for similar situations?
Yes
Yes
Are safeguards cost effective?
No
No
Was the rout Cause determined?.
No
Is failure Compliance related?
yes
can safeguards be implemented?
Yes
Rate of occurrence
Yes
yes
No
Use root cause as basis for improvement.
Yes
Establish safeguards to prevent, correct or detect failures.
Is the failure training related?
No
No
Determine frequency of failure now.


Flowchart - Determining Detectability
Something needs to be assessed for detection, in our case, clients Health.
Does this apply for quality of service?
Policy and procedure
Training
Identify where failure can
Identify where failure can occur
Could policies & procedures revision eliminate failure?
No
Yes
Revised policies and procedures to eliminate failure
Do control detect if a failure occurs?
Could change in policies and procedures of the company detect failures?
Yes
Any remaining failure risks?
Could vigorous training of office staff correct failure?
Modify training procedures.
Yes
No
Start training of staff and clients on policies and procedure for compliance.
No
No
Rate for risk of detection

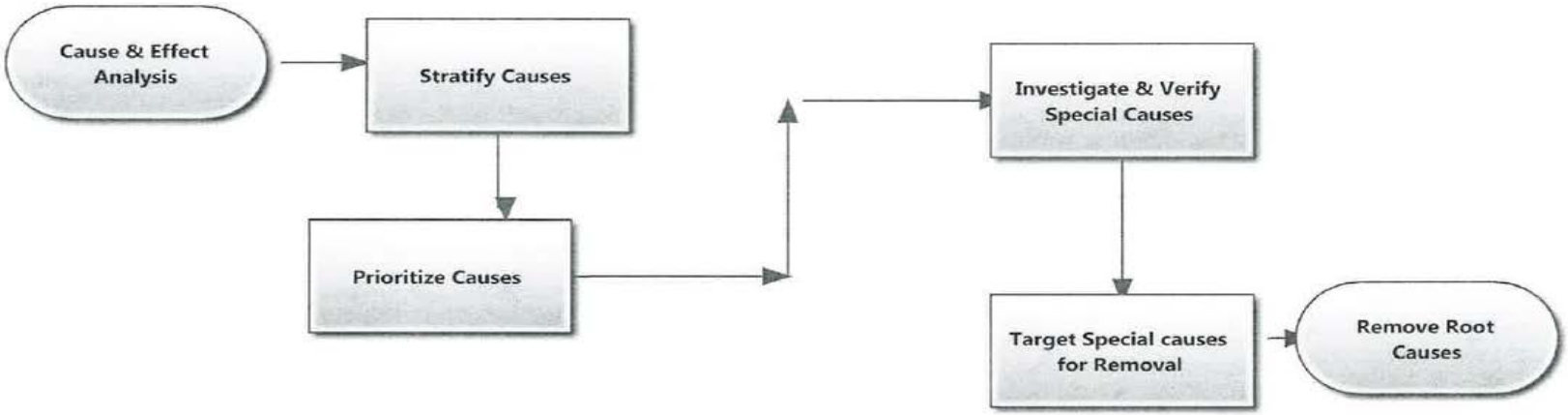
Failure Mode and Effect Analysis of Clients/Patients Initial Health Assessment Worksheet, Before Improvement

Failure Mode	Cause of failure	Effect of failure	Occ.	Severity	Detection	RPN	
1-Supervisor failed to do proper health assessment, noncompliance.	1- Lack of training 2- Deficiencies in policies and procedure of the Company	Wrong health assessment will jeopardize safety and health of individuals.	8	9	10	720	
2-Attendant/Caregiver failed to perform and follow up his or her assigned task.	1- Lack of training 2- Lack of communication 3- Lack of coordination 4- Not following code of ethics	The tasks are not followed up according to service plan	8	10	7	640	
3-Clients/Patients failed to follow up guide lines, rules, regulation and Protocol of the company.	1- Lack of training 2- Lack of responsibilities	The Company will lose the clients/ patients	7	4	9	252	

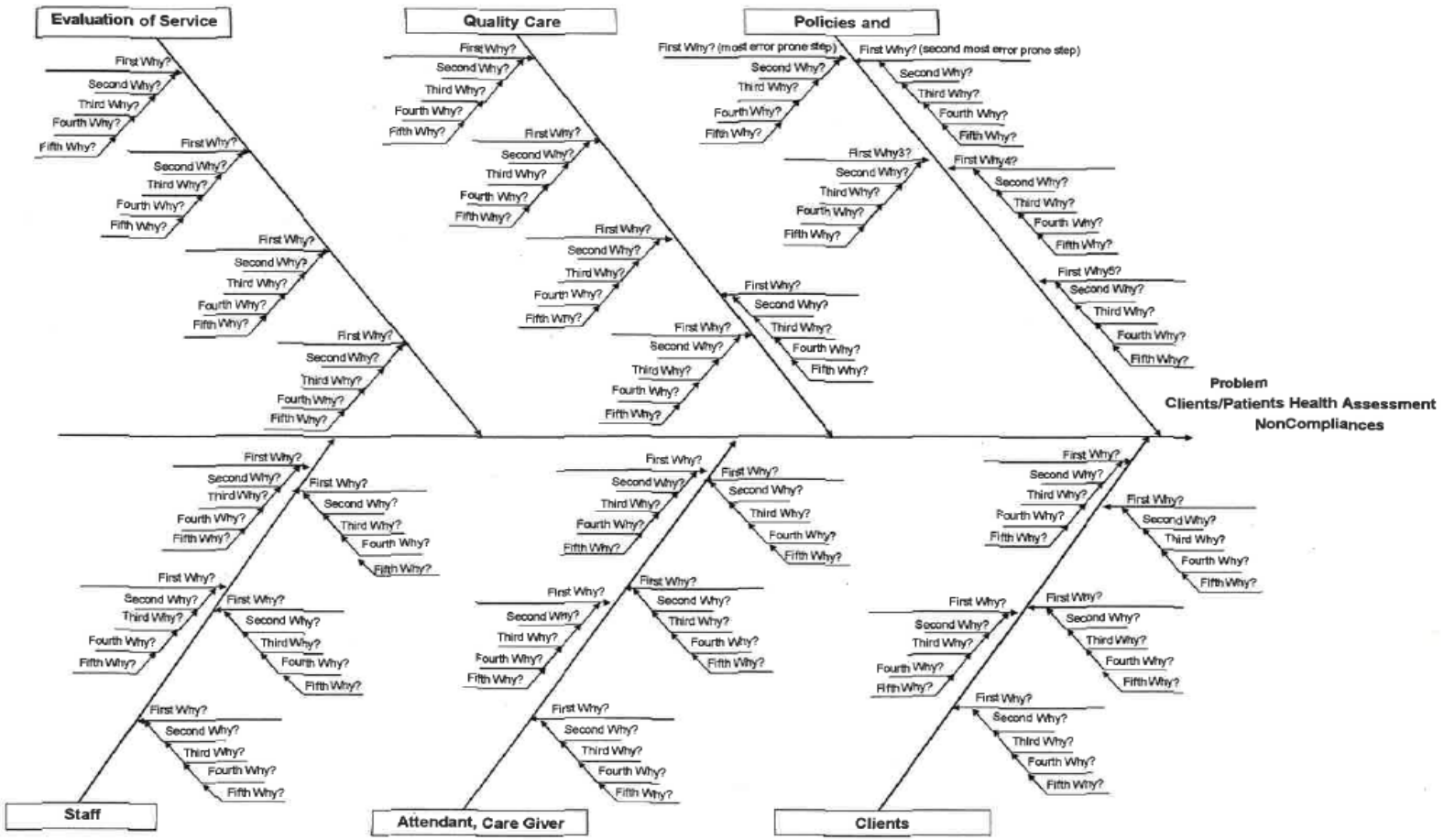


9

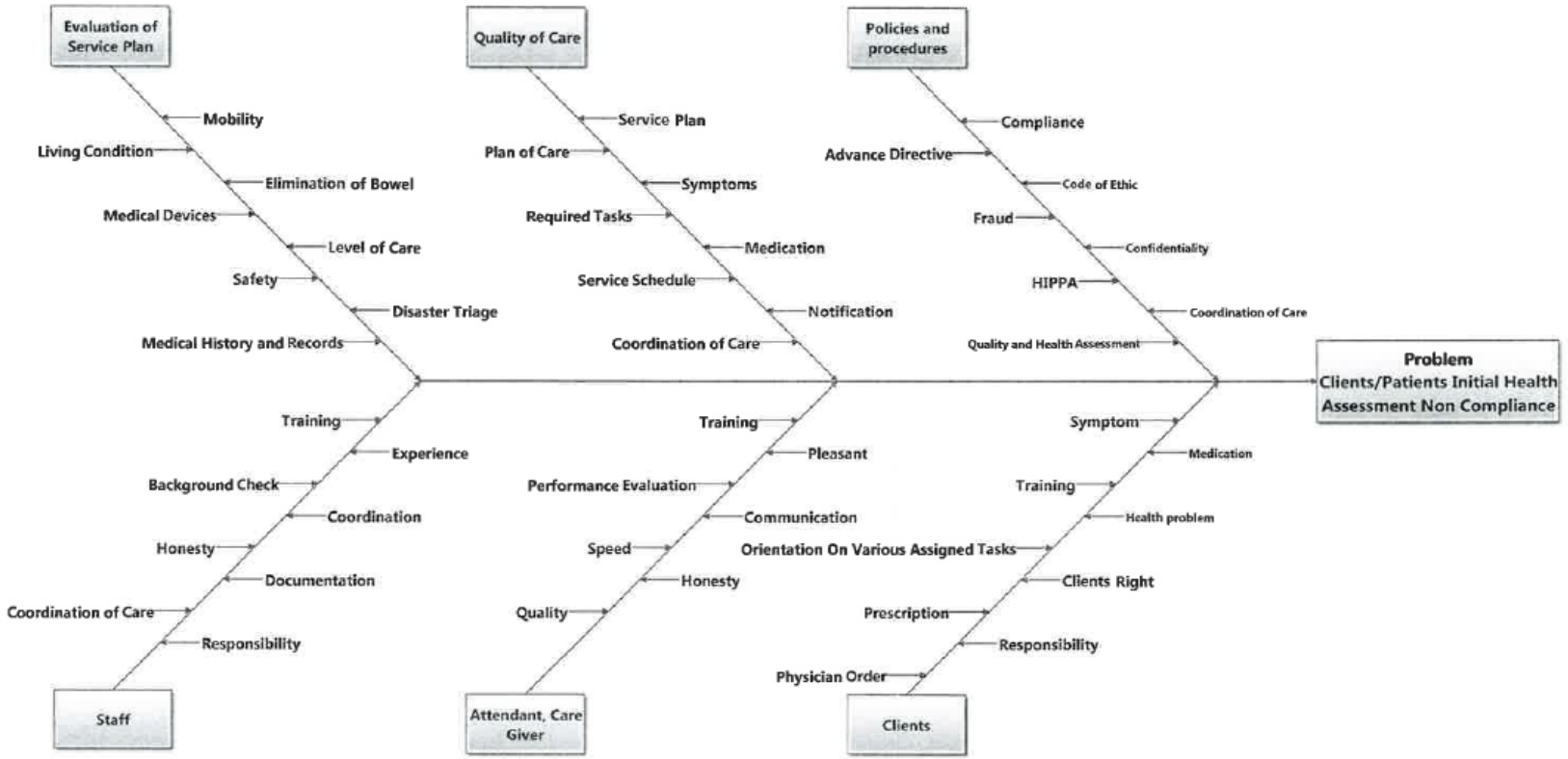
Initial Health Assessment Root Cause Analysis process



10


Evaluation of Service
Quality Care
Policies and
First Why? (most error prone step)
First Why? (second most error prone step)
First Why3?
First Why4?
First Why5?
Problem
Clients/Patients Health Assessment
NonCompliances
Staff
Attendant, Care Giver
Clients
First Why?
Second Why?
Third Why?
Fourth Why?
Fifth Why?

Cause and Effect, Fishbone, Ishikawa Diagram



12

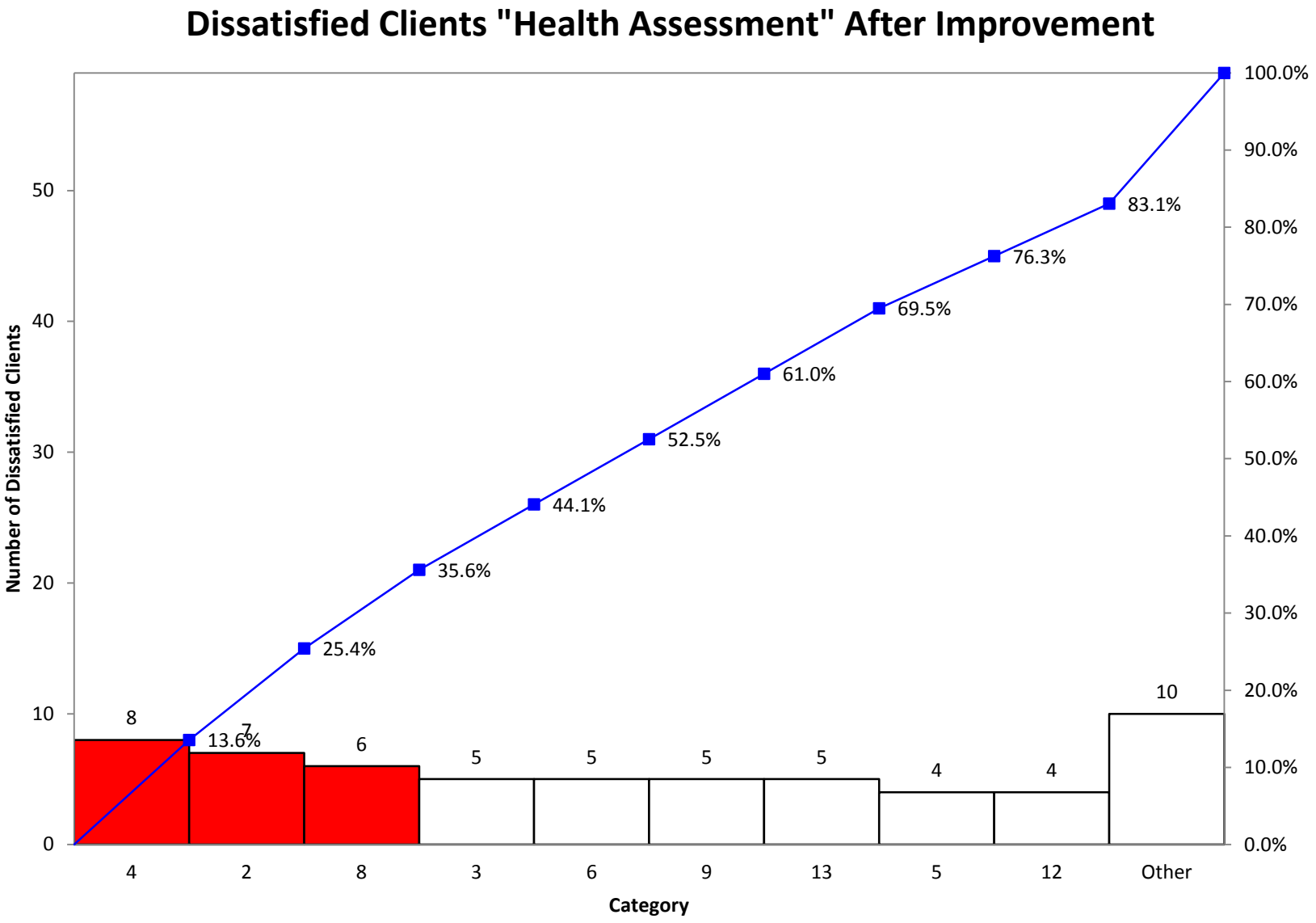
and establishing ground rules and regulations, Pareto Chart was constructed to identify critical and high risk areas of clients/Patients health assessment for improvement.

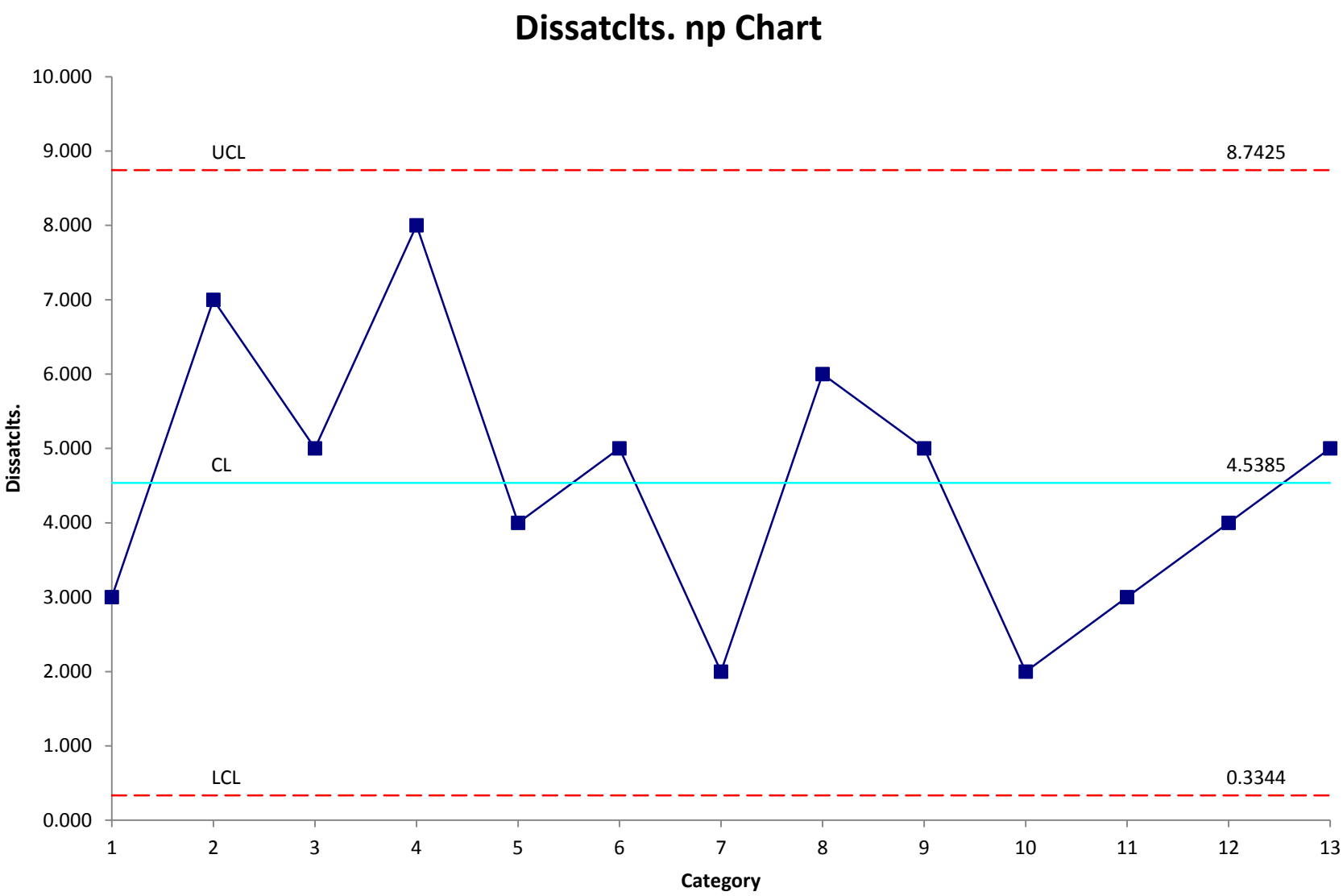
Improve:

The team improved quality of health assessment by recalculating and reducing risk priority numbers or rating, standardizing and simplifying processes and procedures by revising policies and procedures of the company, decreasing variability, providing comprehensive education, training , retraining, documentation, communication, establishing culture and team work for the staff in the office and supervisors on the field at the clients/patients home.

Control and Sustain

Categories	Survey, Clients Initial Health Assessment, number of Dissatisfied clients Before Improvement	
1	Services not ordered on time.	3
2	Consent forms are not sign.	7
3	Practitioner statements were not signed.	5
4	The plan of care related was not consistent with client's care.	8
5	The amount of hours were not consistent with clients need.	4
6	The initial health assessment was not completed within the time frame.	5
7	Ali the demographic information was not present.	2
8	The service initiation was not within the time frame.	6
9	Attendant was not oriented properly, before or at the time of services delivery.	5
10	Complaints were not documented as per policies and procedures of the company.	2
11	The documents were not sent to the case worker and case manager on time.	3
12	Supervisor did not follow up initial health assessment as per guide line of policies and procedures of the company.	4
13	Attendant did not complete service record forms correctly.	5
Total	After Improvement	59





Failure Mode and Effect Analysis of Clients/Patients Initial Health Assessment Worksheet, after Improvement

Failure Mode	Cause of failure	Effect of failure	Occ.	Severity	Detection	RPN	
1-Supervisor failed to do proper health assessment, noncompliance.	1- Lack of training 2- Deficiencies in policies and procedure of the Company	Wrong health assessment will jeopardize safety and health of individuals.	4	5	7	140	
2-Attendant/Caregiver failed to perform and follow up his or her assigned task.	1- Lack of training 2- Lack of communication 3- Lack of coordination 4- Not following code of ethics	The tasks are not followed up according to service plan	5	6	4	120	
3-Clients/Patients failed to follow up guide lines, rules, regulation and Protocol of the company.	1- Lack of training 2- Lack of responsibilities	The Company will lose the clients/ patients	4	7	6	168	

The team established and implemented a plan to monitor on going effectiveness through control charts. Failure Modes with high RPN or rating immediately warranted our attention for improvement.

CONCLUSION:

1-Benefits obtained by applying Failure Mode and Effect Analysis Technique:

Failure mode and effect analysis enhances all dimensions of an organization performance, improves quality and performance by helping and identifying areas were quality improvement is necessary, improves financial performance, involves a relatively small amount of time, resources and finance when compared to potential return on any investment in this technique, Enhances team approach. Many health care organizations are growing accustomed to team based approach in their quality care areas, reduces variability, enhances safety of

clients/patients, processes and systems, increases clients/patients satisfaction and solidifies their loyalty.

2- Failure Mode and Effect Analysis is Proactive risk reduction strategy and would be put in place to avoid problematic and other foreseeable situations. Root Cause Analysis is reactive strategy would be in response to problems and a situations that have already happened.