



Dissertation Presentation

**Statistical Quality Control Chart: An Initiative
To Measure and Control Quality
in Healthcare Operations
Internship training at Max Hospital Bathinda**

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Introduction:

What are Control Charts ?

- A “Statistical Quality Control Chart” is a tool that graphically displays the control limits on process outcomes.
- Graphical depictions of process performance enable managers to know **exact extent** of their processes and to make appropriate decisions.



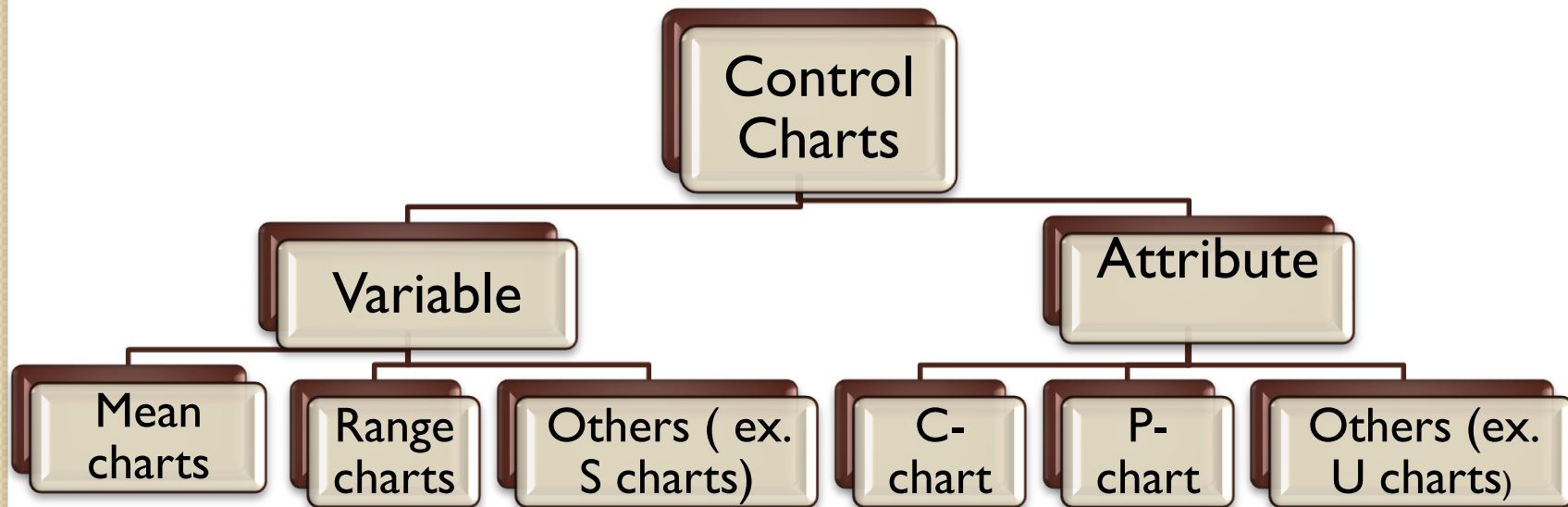
Why To Use Control Chats ?

- Make **defects visible**
- Detects variations in the processes & **warns** if any departure from the tolerance limits
- To monitor the **outcomes**
- To find **extent of error**

Applicability of Control Charts

- Infections
- Accuracy of medications
- Patient Satisfaction
- Rates of patient falls
- Post-operative lengths of stay
- Adverse events
- Medication errors etc.

Types of Control Charts



Rationale

- Applicability of Control Charts can act as **an initiative** for visualization and analysis of performance of the process.
- Major processes that highly affect quality and productivity of the hospital are patient satisfaction, hospital acquired infection and initial assessment.

Aim & Objectives

Aim : To measure and control quality in health care operations.

Objectives:

- To monitor the **infection rate** with the help of attribute based **c-chart**.
- To monitor the **patient satisfaction** level regarding delivery of services by the application of p-chart.
- To monitor **turnaround time of initial assessment in emergency** department by application of **mean and range charts**.



Research Methodology

Study Design:

Observational Descriptive study

Study location:

A tertiary care hospital in Bathinda

Data Collection:

1.To monitor infection rate

- A period of 11 months (May 2015 to March 2016)
- 9months retrospectively from Hospital information system
- 2 months from observation(using checklists).

2.To monitor the patient satisfaction

- A period of 3 months.
- 2 months retrospectively from Hospital information system
- 1 month was collected through systemic observations.



Cont...

- **3.To monitor turnaround time of initial assessment in emergency department**
- 10days
- Observations using checklist

Cont...

• **Data Analysis:**

Microsoft Excel version 2010

Sampling :

- To monitor the infection rate –Purposive Sampling
- To monitor the patient satisfaction – Retrospective and Non probability convenience sampling
- To monitor turnaround time of initial assessment in emergency- Non probability convenience sampling

Sample size:

1.To monitor infection rate

60 patients over a period of 11 months

2.To monitor the patient satisfaction :150 patients

3.To monitor turnaround time of initial assessment in emergency :
50 patients

Data Compilation and Analysis:

Formula used:

1.To monitor Infection Rate

(Upper Control Limit) $UCL = \text{Average} + z \sqrt{\text{Average}}$

(Lower Control Limit) $LCL = \text{Average} - z \sqrt{\text{Average}}$

2. To monitor the Patient Satisfaction

(Upper Control Limit) $UCL = \bar{p} + z \sqrt{\bar{p}(1 - \bar{p})/n}$

(Lower Control Limit) $LCL = \bar{p} - z \sqrt{\bar{p}(1 - \bar{p})/n}$

3.. To monitor Turnaround Time of Initial Assessment in Emergency Dept. :

Mean chart-

(Upper Control Limit) $UCL = \bar{X} + A_2 \bar{R}$

(Lower Control Limit) $LCL = \bar{X} - A_2 \bar{R}$

Range chart-

(Upper Control Limit) $UCL = D_4 \bar{R}$

(Lower Control Limit) $LCL = D_3 \bar{R}$



Cont...



VAP



CAUTI



CLBSI



PATIENT
SATISFACTION



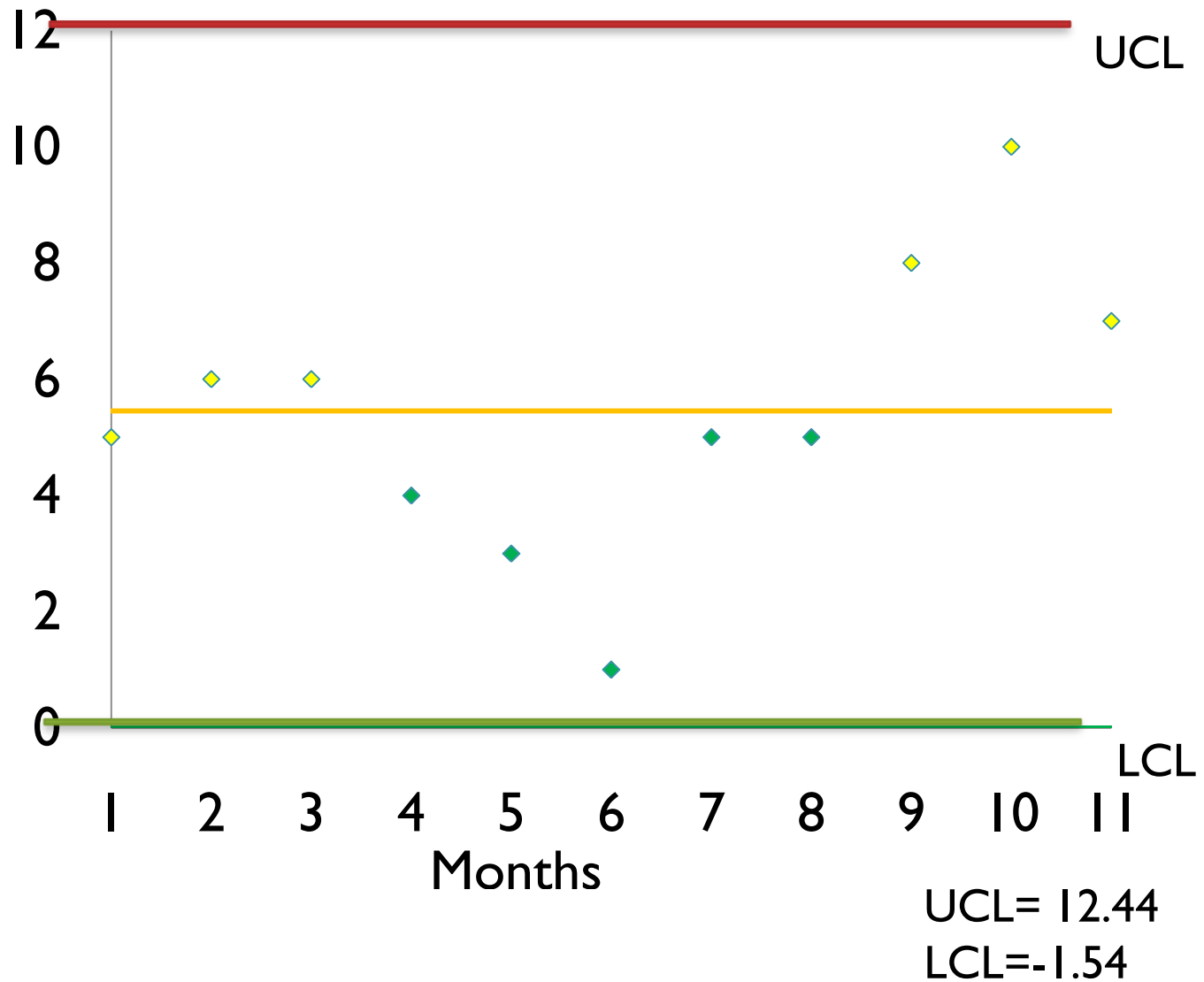
EMERGENCY



ANALYSIS

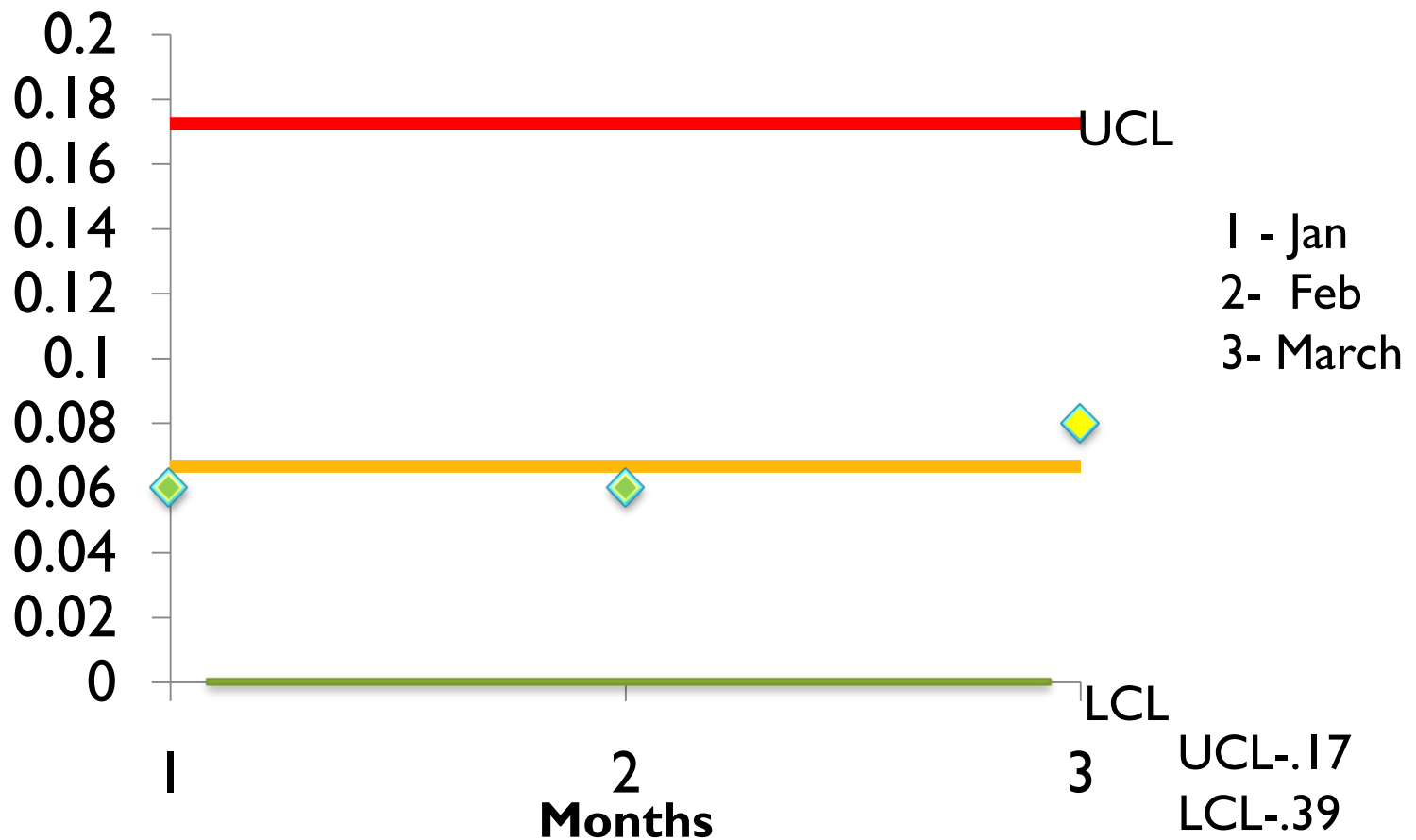
Outcomes

C-CHART (99.73%)



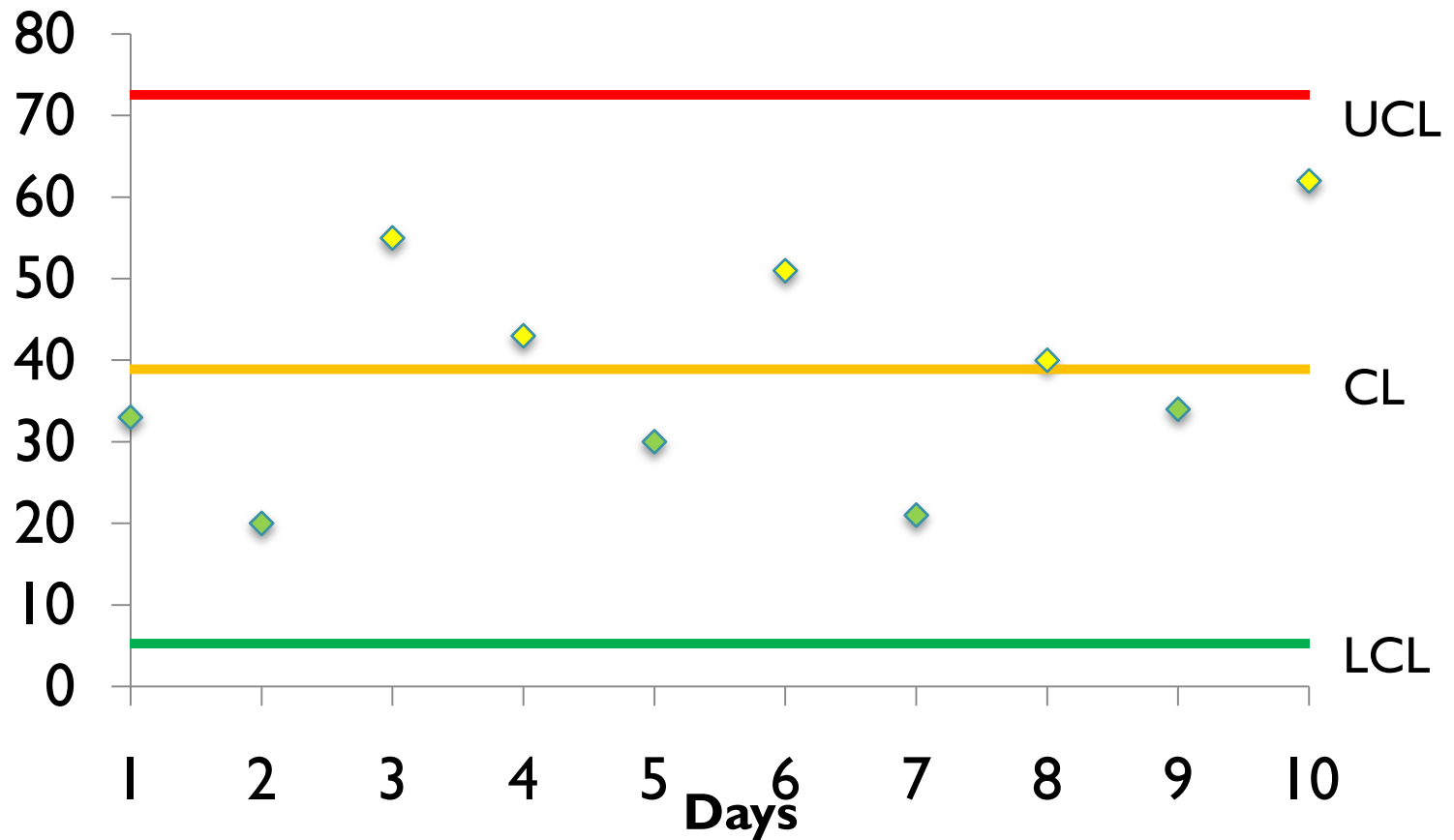
Outcomes...

P- Chart (99.73%)



Outcomes...

MEAN & RANGE CHART(99.73%)

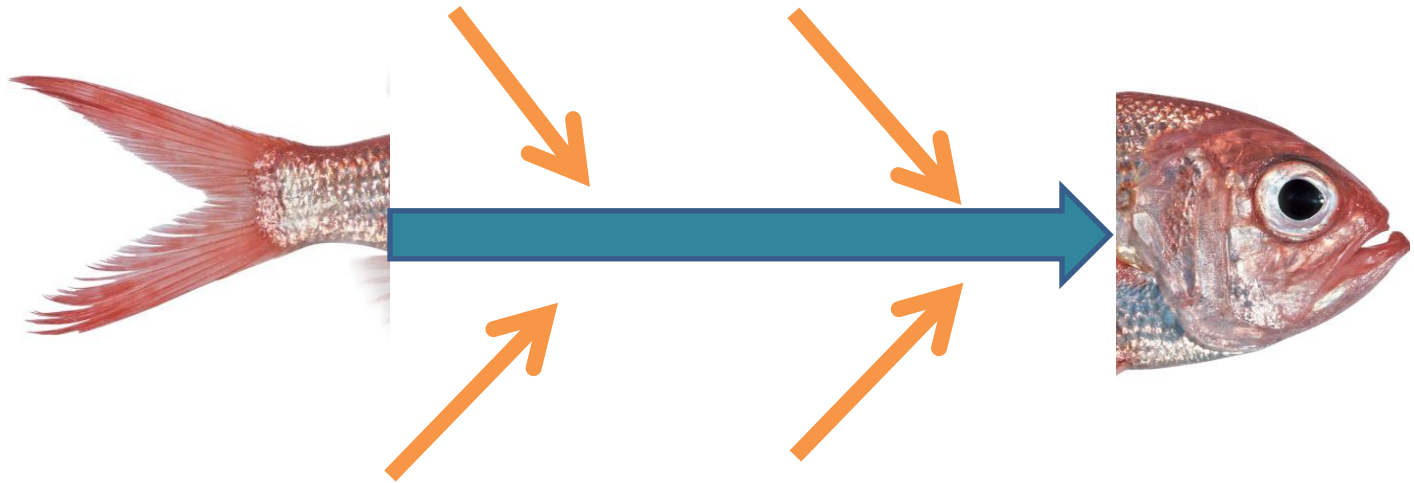


Reasons:

1. For Hospital Acquired Infection

Culture report not sent timely

Poor hand hygiene adherence

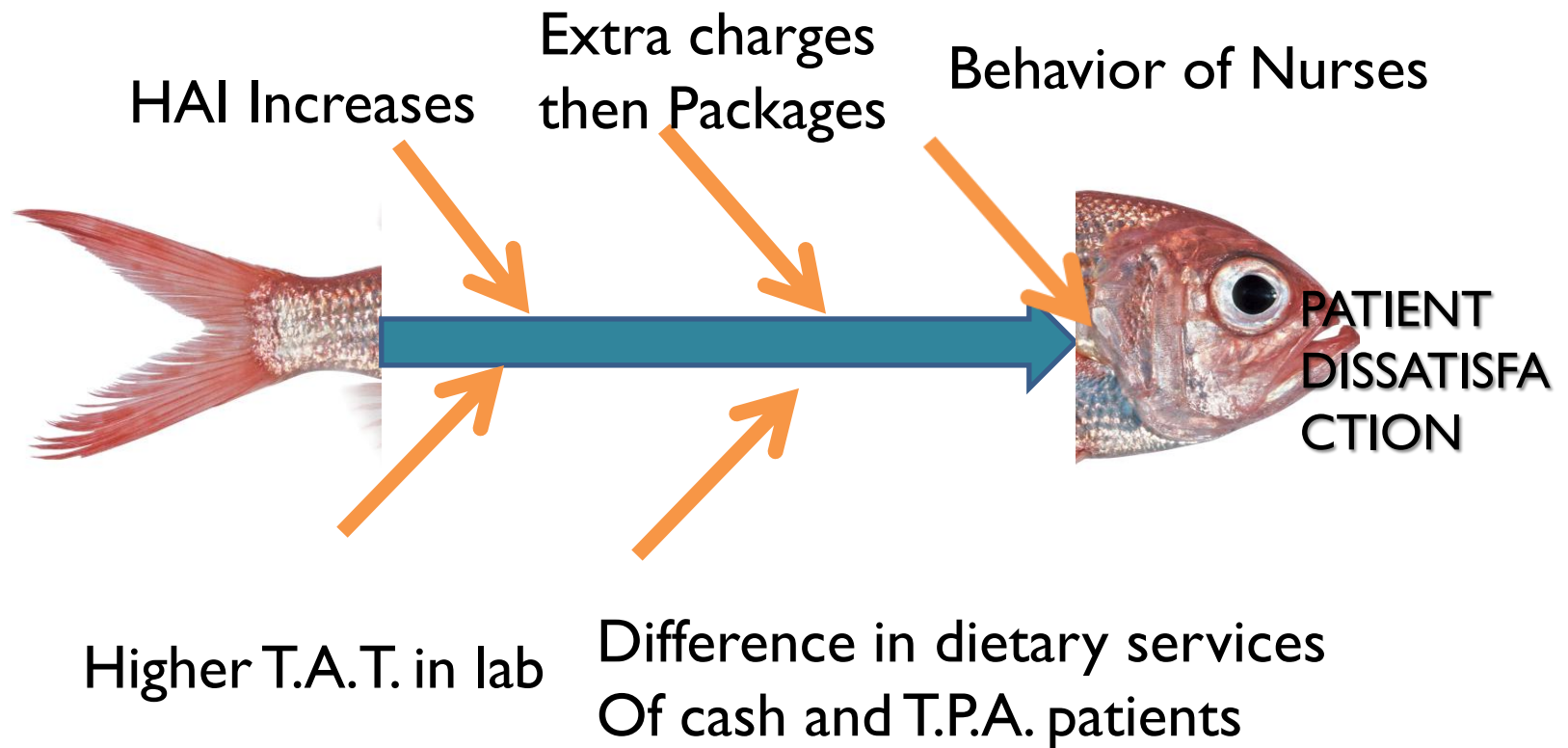


H.A.I.

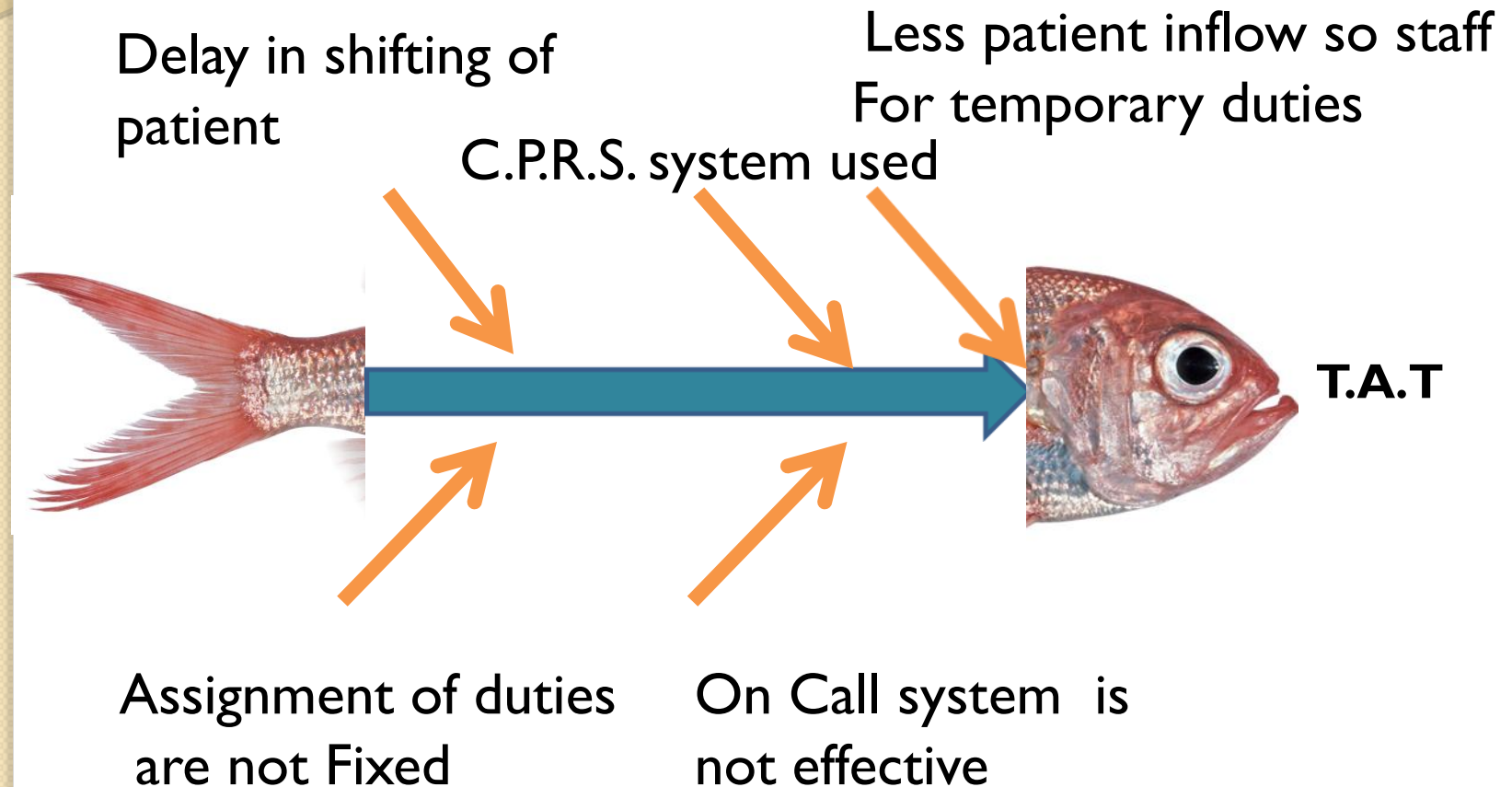
Poison & Gunshot cases are Higher

Nurse patient Ratio increases

2. Patient Dis-Satisfaction



3.High T.A.T in Emergency



Recommendations:

- **Separate accommodation** for T.P.A. and cash patients
- Movement of truth should be used in explaining proper breakup of charges.
- **Internees** of DMLT should be invited
- Emergency staff should have given responsibilities which are limited to the department only
- Department wise monthly **reward** should be given to team ,in which hospital acquired infection is minimum.



Post Analysis:

- Separate accommodation for T.P.A. and cash patients initiated
- Rewards to nurses was announced
- Training given to Quality Executive regarding control charts



Ethical considerations

- **Prior information** was given before visiting any department.
- **Confidentiality** was ensured to all patients.

Thank You



Questions session

Questions



LOGO