Reducing Turn Around Time In OPD using Six Sigma approach

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Preview

- Introduction
- Research question
- Aim
- Objectives
- Methodology
  - ✓ Brief
  - ✓ Duration
  - ➢ DMAIC
  - ❑ Define – Process map
  - ❑ Measure – Current process capability
  - ❑ Analysis – Perceived causes
  - ❑ Improve - Probable solutions and interventions
  - ❑ Control – Determine the impact and strive for further improvement
- Limitations
- Conclusion

Introduction

For Patients

- Most frustrating time

For Hospital

- Acts as barrier to efficient patient flow
- OPD – Influences patient's impression of the hospital

Research Questions

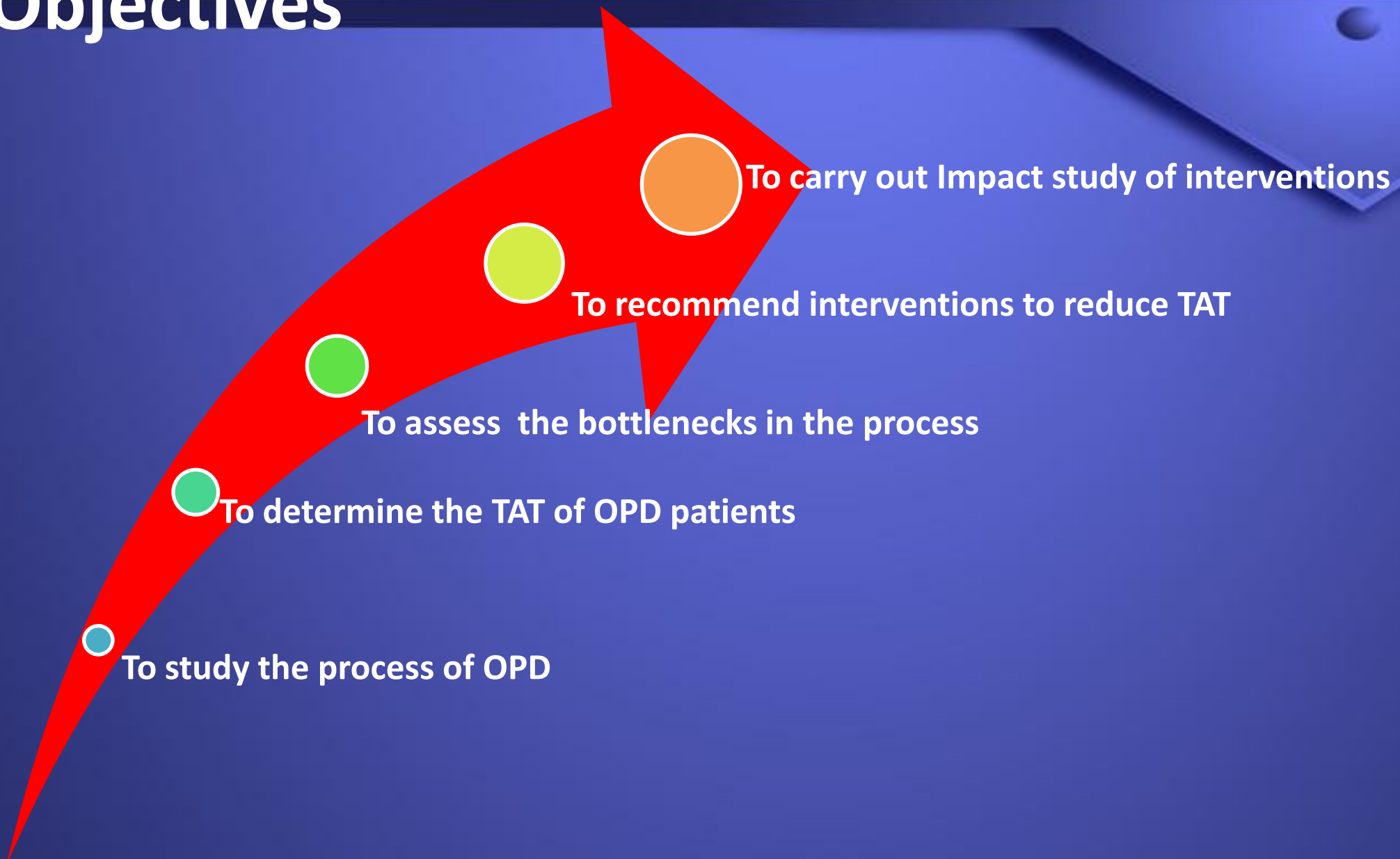
What is the TAT in Outpatient Department ?

How to reduce this TAT ?

Aim

To reduce the TAT of OPD Patients

Objectives



- To carry out Impact study of interventions
- To recommend interventions to reduce TAT
- To assess the bottlenecks in the process
- To determine the TAT of OPD patients
- To study the process of OPD

Methodology

Study type
- Analytical, Applied, Quantitative & Empirical

Duration – 8 Feb to 07 May 16

Study Design
- OPD, Eternal Hospital

Data collection method
- Time motion study

Type of data
- Primary

Sample size
- 10% of OPD cases

Sampling Technique
- Systematic Sampling

Analysis Tools Used

- Observation study
- Time motion study
- Fish Bone Diagram
- Modified FMEA
- Brainstorming
- MS Excel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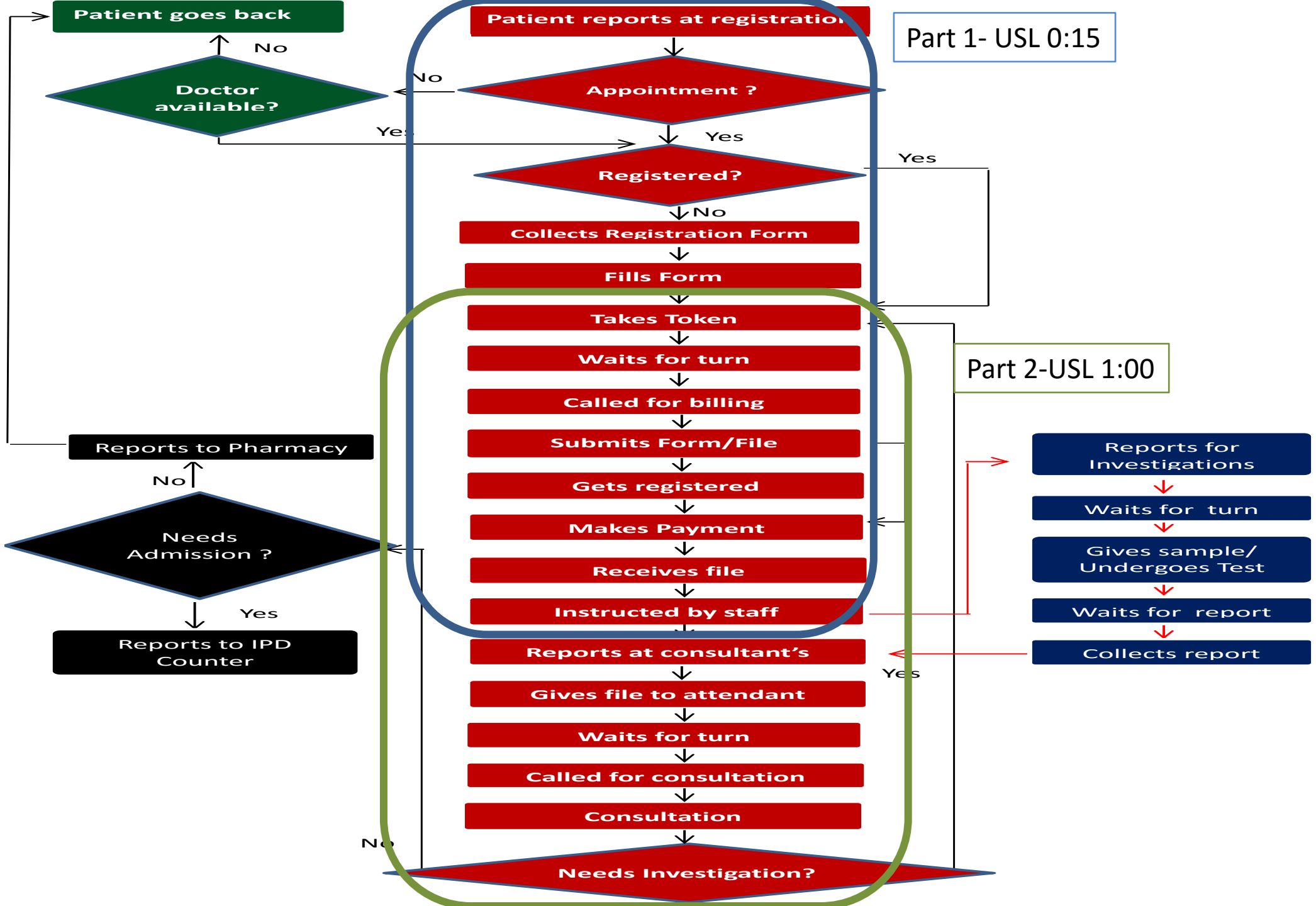
PROCESS FLOW CHART



Measure

Part 1 Check Sheets

Token collection time (A)	Called for billing time (B)	Time taken (B – A)	Billing time (C)	Time taken (C – B)	File handover time (D)	Time taken (D – C)	Total time taken (D – A)
09:35	09:55	00:20 min	09:57	00:02 min	09:57	00:00 min	00:22 min
10:14	10:21	00:07 min	10:24	00:03 min	10:25	00:01 min	00:11 min
11:27	12:05	00:38 min	12:09	00:04 min	12:09	00:00 min	00:42 min

Part 1

UHID	1st billing time (A)	2nd Billing time (B)	Time taken (B – A)
24293	08:41	09:45	01h 04 min
34482	10:55	12:16	01h 21 min
32987	11:43	13:09	01h 26 min

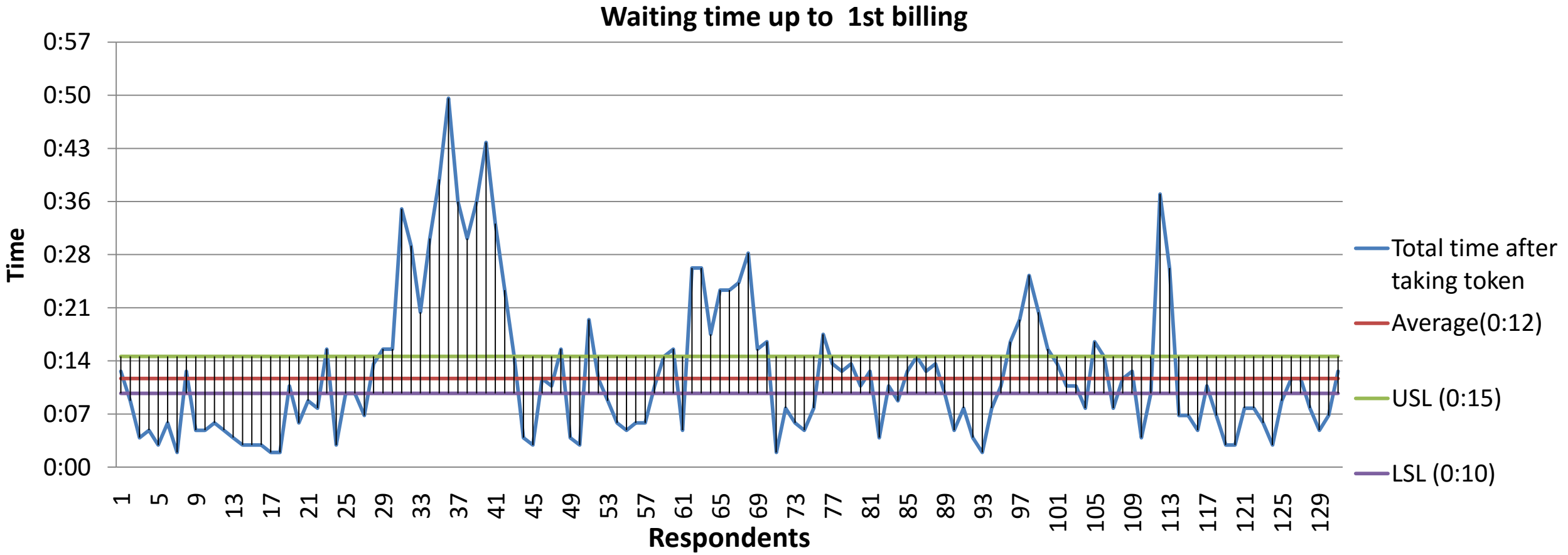
Note-

- Only those patients whose consultation as well as investigations were conducted on same day were included.
- Following patients were not included :
  - Patients using health packages.
  - Patients not advised any investigation.
  - Patients who comes for investigations only
  - IPD Patients

- **Part 3** of the waiting time was covered under a separate study

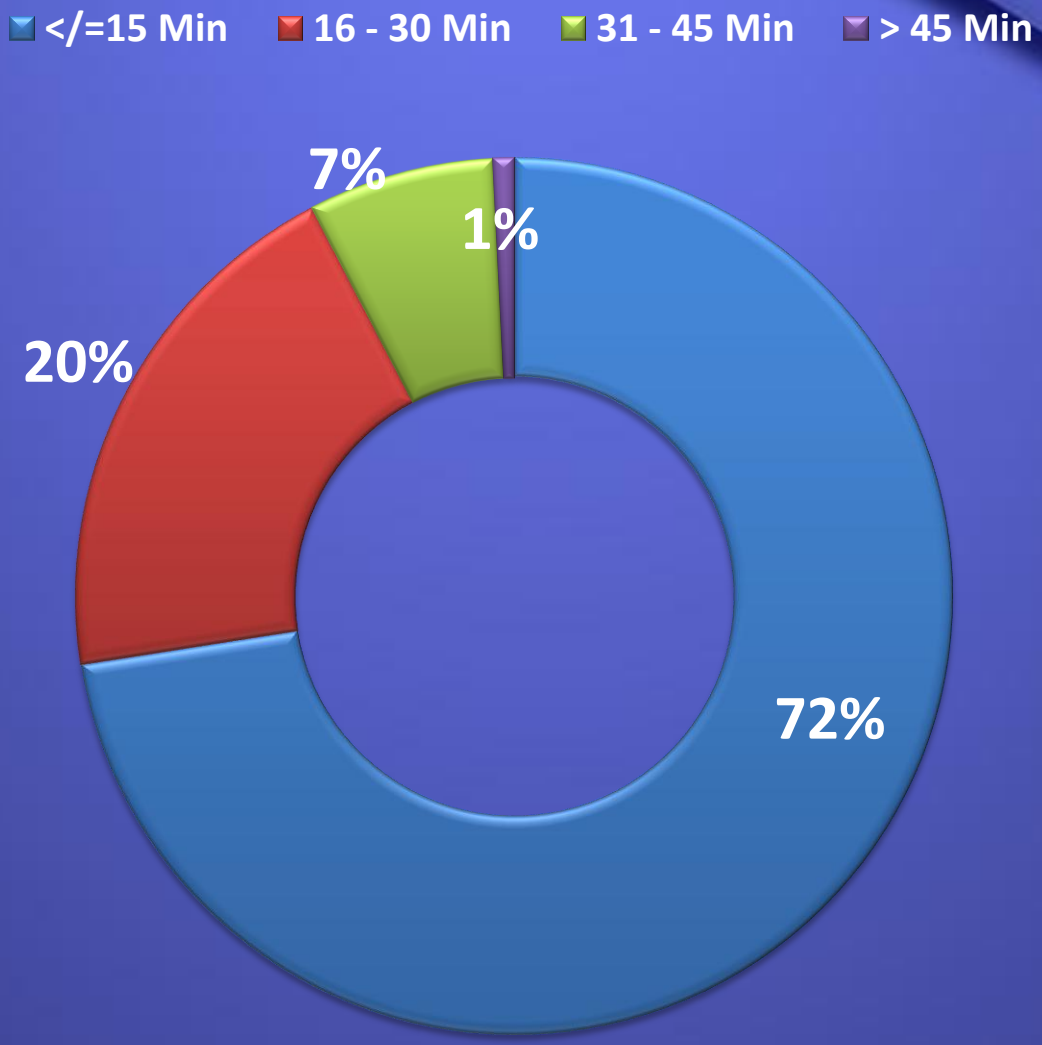
Sampling & Results : Part 1

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
OPD	254	203	188	207	172	252	1276
10%	25.4	20.3	18.8	20.7	17.2	25.2	127.6
Sample	26	21	19	21	18	26	131



Results: Part 1

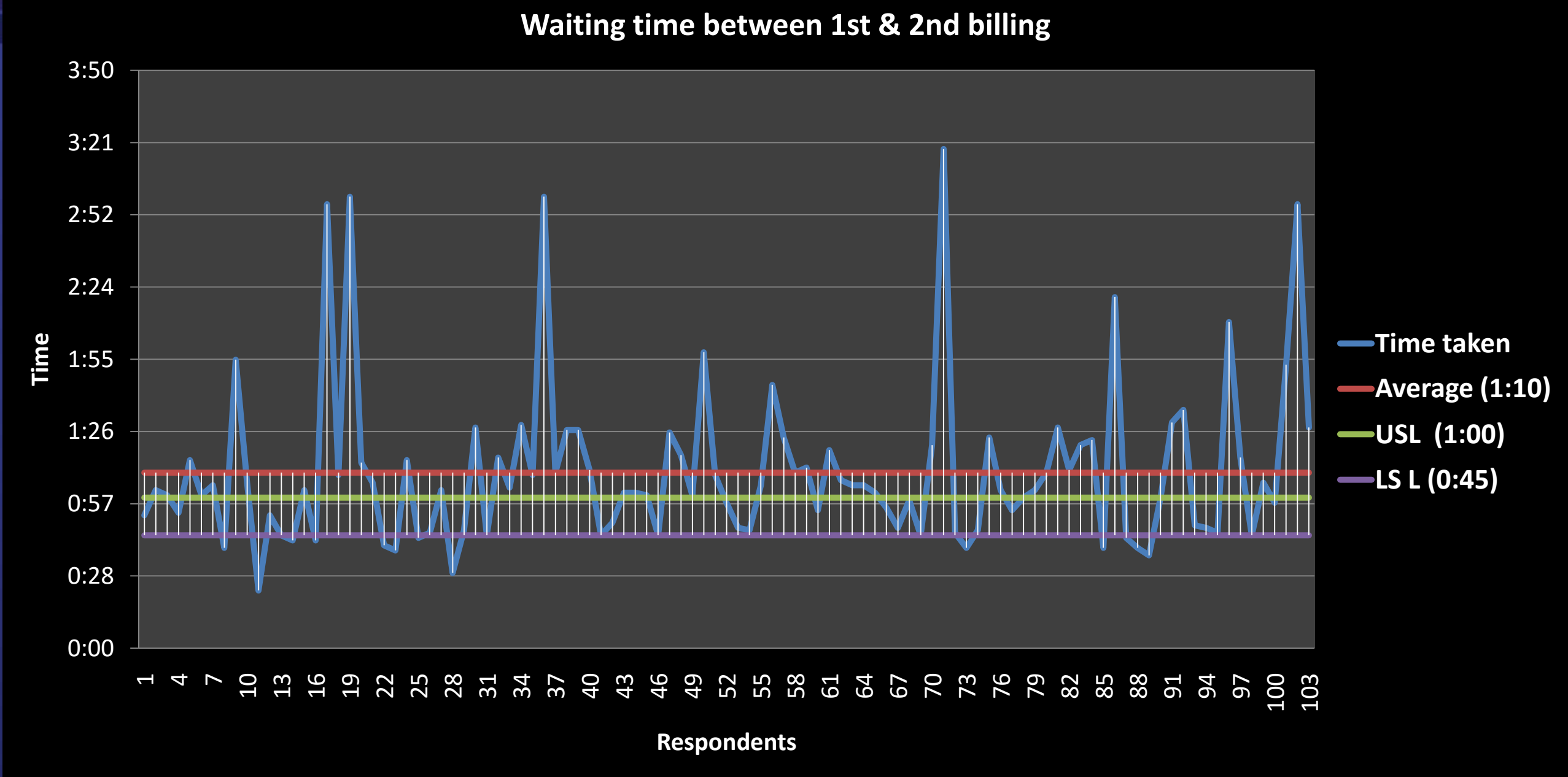
Waiting time



Sampling : Part 2

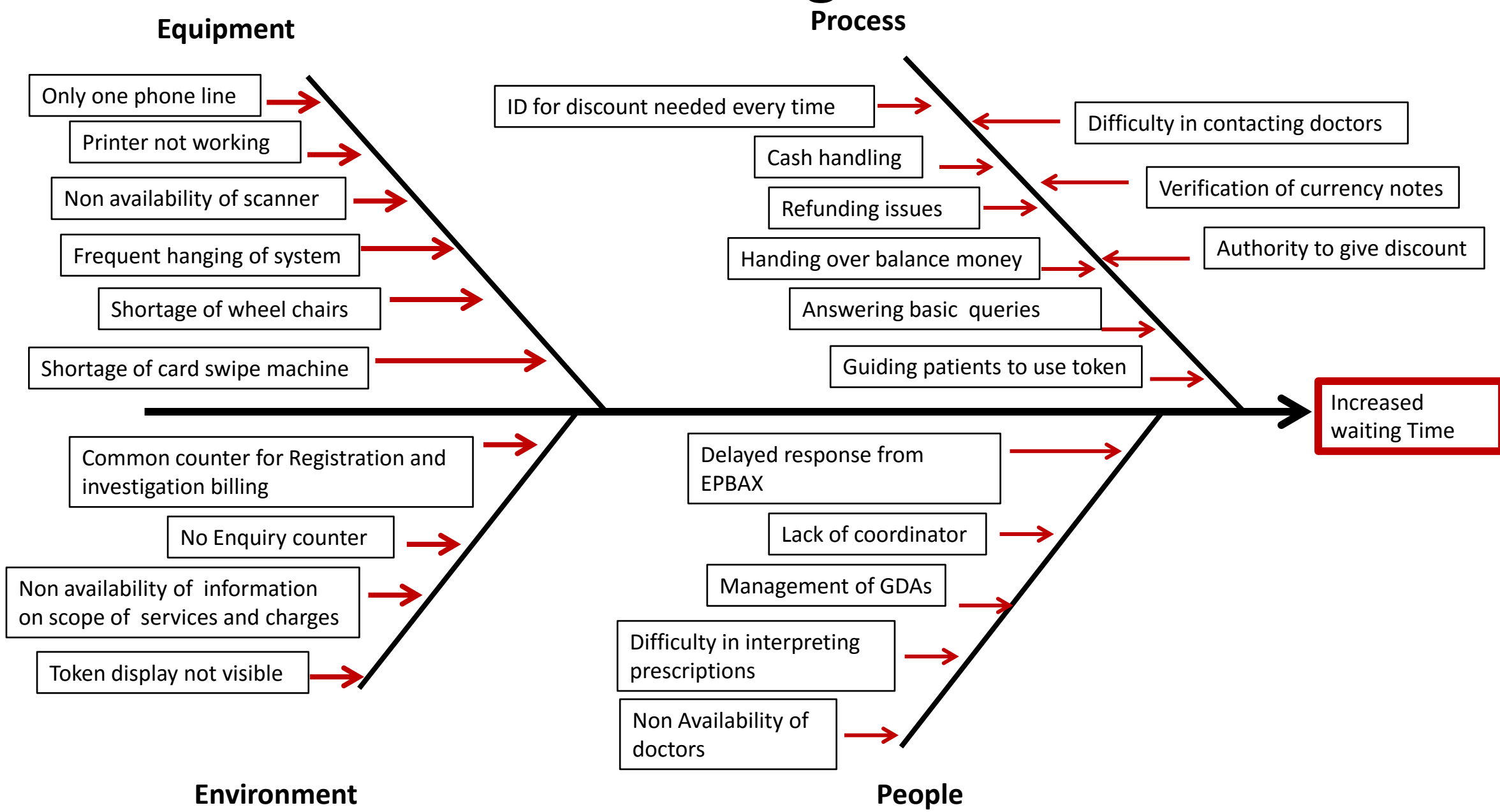
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
OPD	242	200	215	218	197	237	1309
NA	35	32	39	34	29	44	213
Packages	13	16	10	13	18	31	101
Balance	194	152	166	171	150	162	995
10%	20	16	17	18	15	17	103
NA %	14.46	16.00	18.14	15.60	14.72	18.57	16.27
Package %	5.37	8.00	4.65	5.96	9.14	13.08	7.72

Results: Part-2(103)




ANALYSIS
KNOWLEDGE
CONCEPT
EXPERIMENT
CRITICISM
PROBE
CRITICAL
DISPUTE
BOOK
CORE
PROOF
TEST
VALUE
INNOVATION
SUMMARY
PROCESS
PROCEDURE
CALCULATION
CHECK
REPORT
THESIS
STATISTICS
ORGANIZATION
KNOW

Fish Bone Diagram



Modified FMEA

Causes	Occurrence	Severity	RPN	Rank
Guiding patients to use token	9	1	9	15
Handing over balance money	9	5	45	4.5
Refunding issues	1	9	9	15
ID for discount needed every time	9	5	45	4.5
Answering basic queries	5	5	25	9.5
No Authority to give discount	9	9	81	2
Verification of currency notes	9	1	9	15
Difficulty in handling Cash	9	1	9	15
Difficulty in contacting doctors	5	5	25	9.5
Delayed response from EPBAX	5	1	5	19
Difficulty in interpreting prescriptions	5	1	5	19
Lack of coordinator	9	1	9	15
Management of GDAs	5	1	5	19
Common counter for Registration and investigation billing	9	9	81	2
No Enquiry counter	9	1	9	15
Non availability of information on scope of services and charges	9	5	45	4.5
Token display not visible	5	1	5	19
Printer not working	5	1	5	19
Non availability of scanner	9	5	45	4.5
Frequent hanging of system	9	1	9	15
Shortage of wheel chairs	5	5	25	9.5
Shortage of card swipe machine	5	5	25	9.5
Non availability of doctors	9	9	81	2


TIME TO IMPROVE

Possible Solutions

S/N	Causes	Some possible solutions
1	Pre and Post consultation billing counter is same.	➢ Separate dedicated counter for post consultation billing(for investigations) ➢ Additional billing counter specially on high foot fall days like Mondays and Saturdays
2	Discount cases handling ➢ Copy of ID being asked every time ➢ Non availability of scanner/photocopier ➢ Right to authorise not with person on counter	➢ Information can be captured during registration and ID copy attached once only. ➢ Provision of scanner. ➢ Registration- in- charge can be given right to authorise discount.
3	Non availability of loose change	➢ Bulk provision of change of various denominations like Rs 1,2,5,10, 20,50 and 100 every morning. ➢ Provision of in lieu items like candies.
4	Delay in making telephone calls to confirm prescription from doctors, to request for authorisation and for other routine issues due : ➢ Late response from 9 ➢ Lack of telephone sets	➢ Direct call facility to the doctors can be provided between 10 AM to 2 PM. ➢ Provision of two telephone sets.

Possible Solutions (continued)

S/N	Causes	Some possible solutions
5	Frequent hanging of system	➢ Possible upgrading of system
6	Sharing of card swipe machine between OPD I/II and PHC.	➢ Provision of additional swipe machine
7	Frequent enquiry by patients about OPD days, OPD charges and other tests charges.	➢ Setting up of separate MAY I HELP YOU desk. ➢ Static display of OPD Schedule and the Charges
8	Difficulty in handling of cash	➢ Provision of Cash trays ➢ Provision of partition in the drawer
9	Guiding customers on use of token machine	➢ Providing visual instructions on use of token machine
10	Answering basic queries of outside customers on telephone like types of facilities available, names and schedule of doctors etc.	➢ Basic details could be available with the EPBAX operator who can satisfy the caller. Availability of doctors can be checked from the OPD.

Possible Solutions (continued)

S/N	Causes	Some possible solutions
11	Non availability of doctors due to : ➢ Doctor not arrived in hospital. ➢ Doctor on round in wards ➢ Doctor in OT ➢ Doctor gone for lunch ➢ Doctor attending emergency patients	➢ Encourage appointment system ➢ Doctors schedule can be displayed prominently in Hindi and English ➢ Fixed schedule for the rounds should be displayed & can be followed. ➢ OT & OPD days can be different.
12	Wheel Chair Management	➢ One or Two wheel chairs earmarked for OPD I and II could be placed at waiting area. Movement of these can be easily tracked.
13	GDA Management	➢ A suitable tracking system like issue of slips with destination and time can be worked out.
14	Token display screen not visible from the waiting area.	➢ It could be placed centrally in front of the waiting area.
15	Verification of fake Currency notes.	➢ A currency counting and verification machine could be provided

Interventions

- Separate counter for registration
- Person authorised for discount made available
- Placing of wheel chairs
- Educating EPBAX operator for better response
- Rounding off discount rates
- Provision of loose money


Control

Control

Ho 1

- There is no reduction in waiting time in Part 1 of the process before and after the interventions.

Ho 2

- There is no reduction in waiting time for Part 2 of the process before and after the interventions.

Ho 3

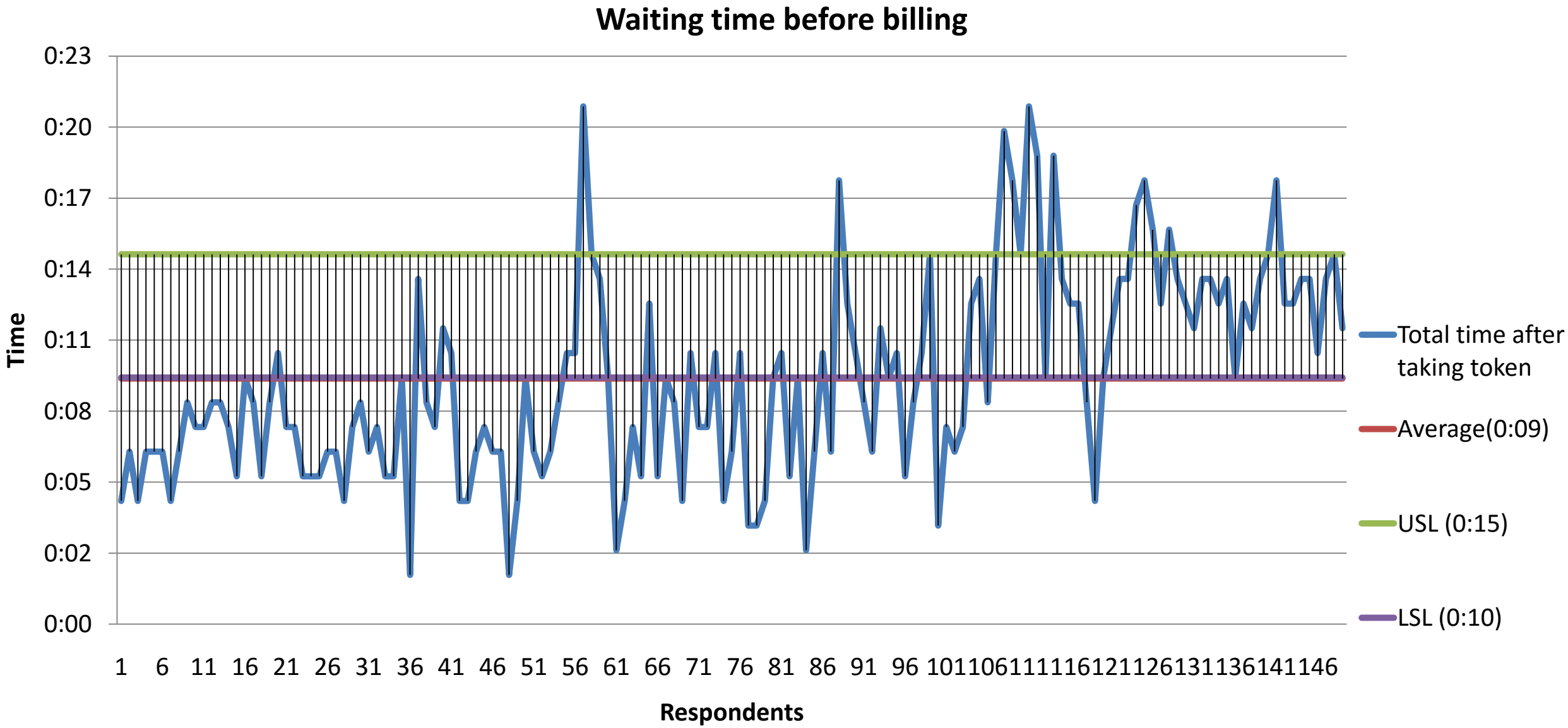
- There is no significant increase in patients who were cleared in less than 0:15 minutes in Part 1 of the process, before and after the interventions

Ho 4

- There is no significant increase in patients who were cleared in less than 0:60 minutes in Part 2 of the process before and after the interventions.

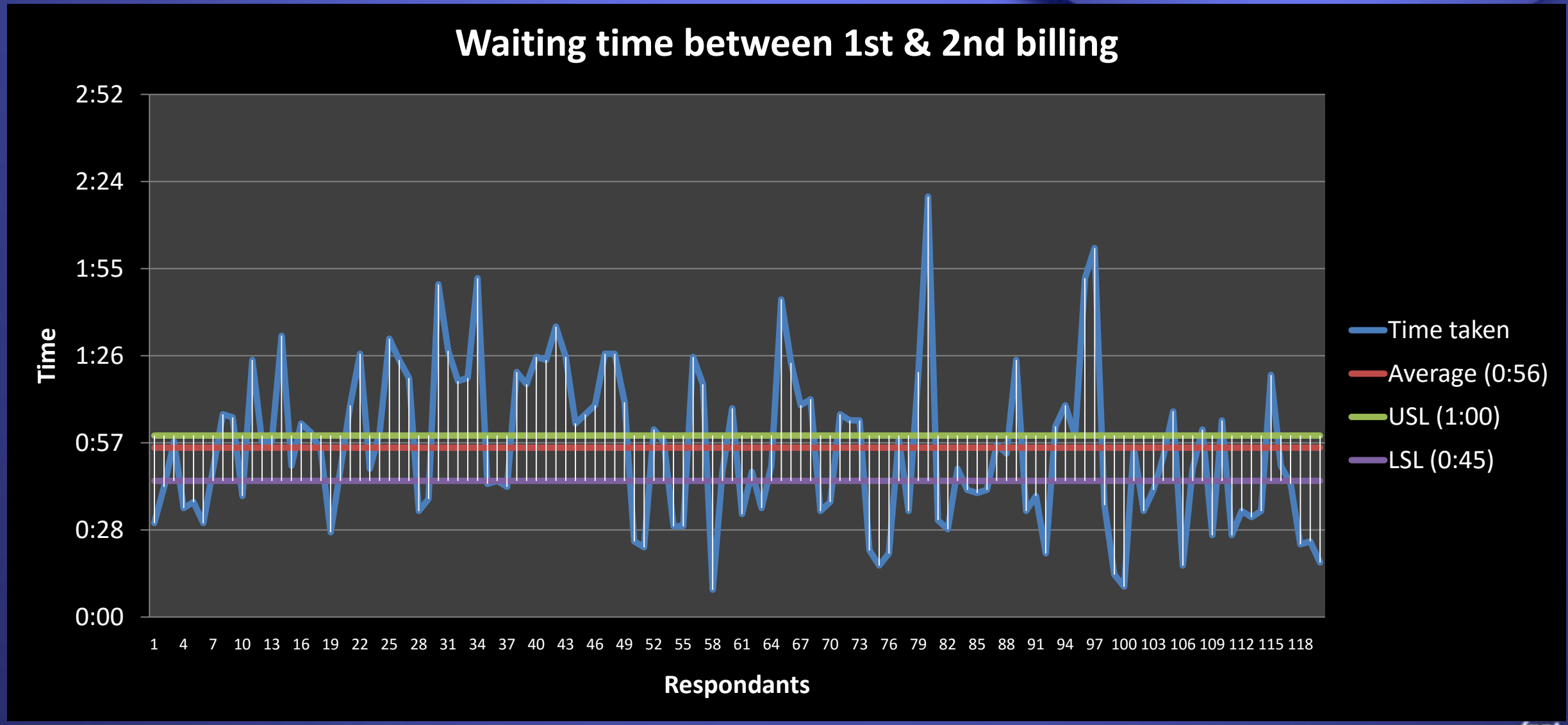
Results: Part-1(n=149)

Ho 1 Rejected, t-Value 4.62 > 1.96 (95% C I)



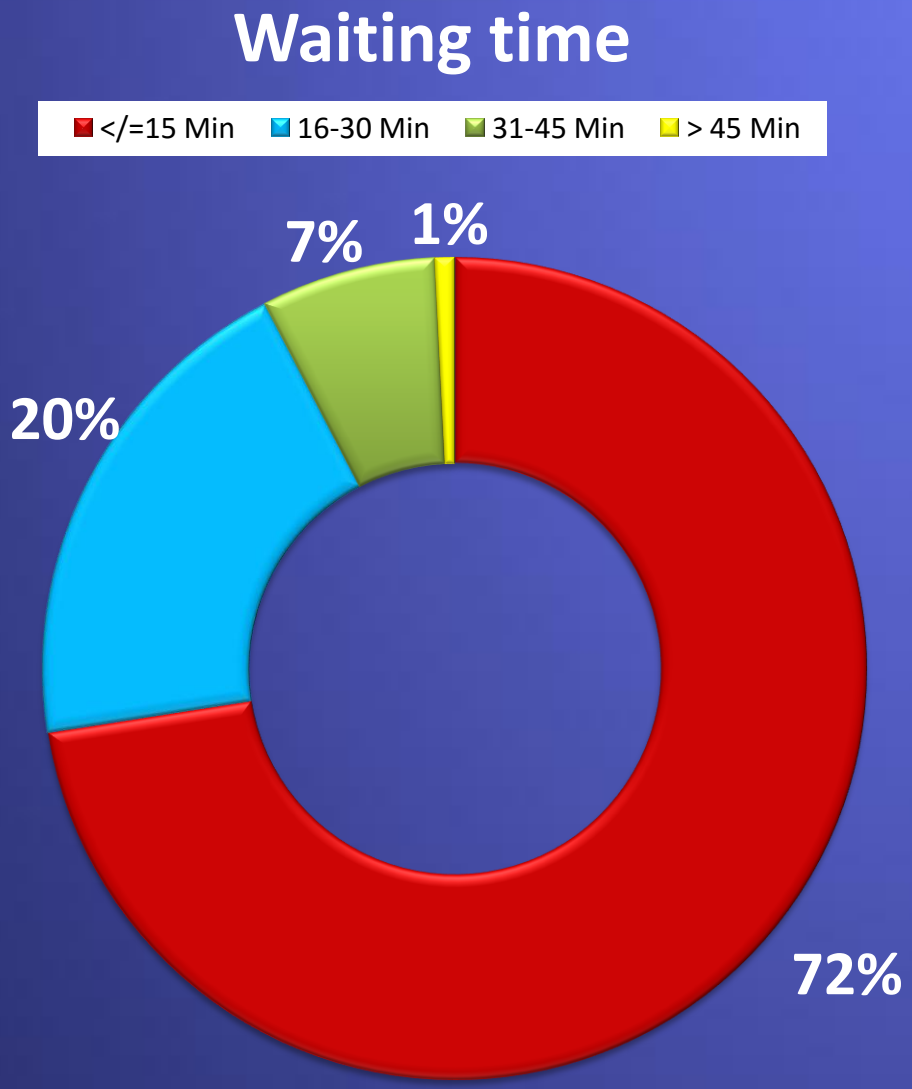
Results: Part-2(n=120)

Ho 2 Rejected, t-Value 10.85 > 3.39 (99% C I)

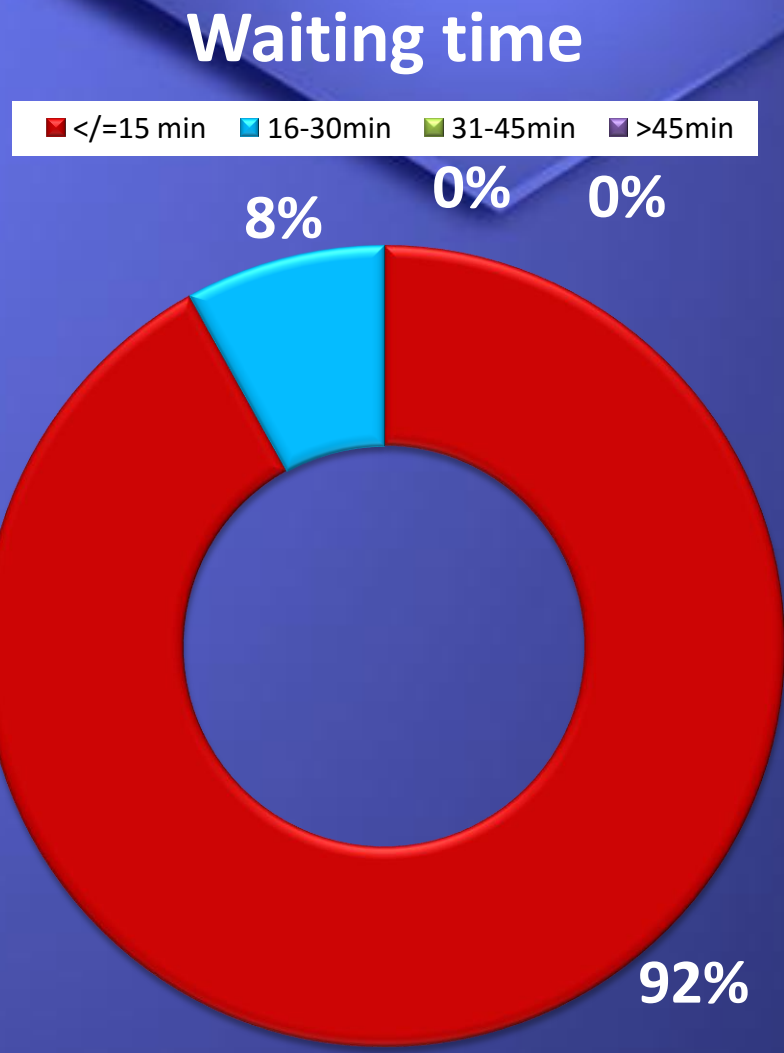


Ho 3 Rejected, z-Value 4.31 > 1.96 (95% C I)

Before

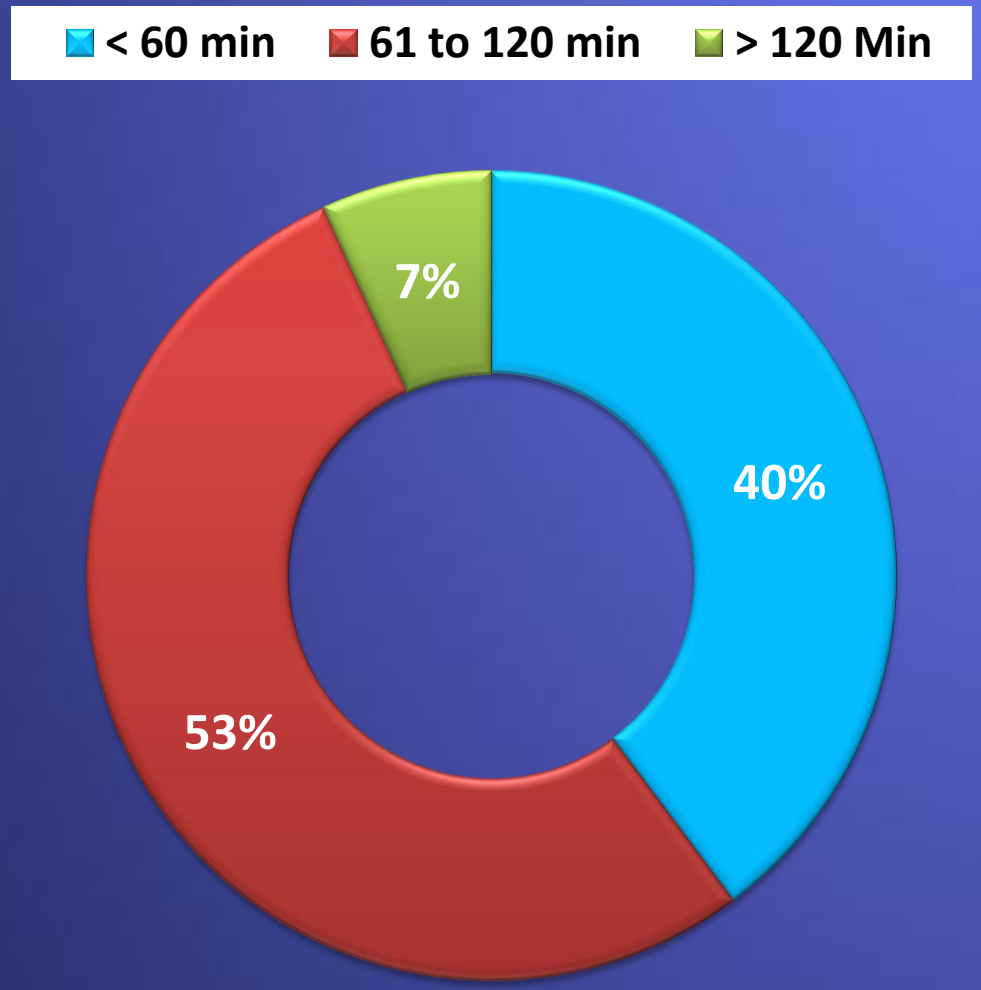


After

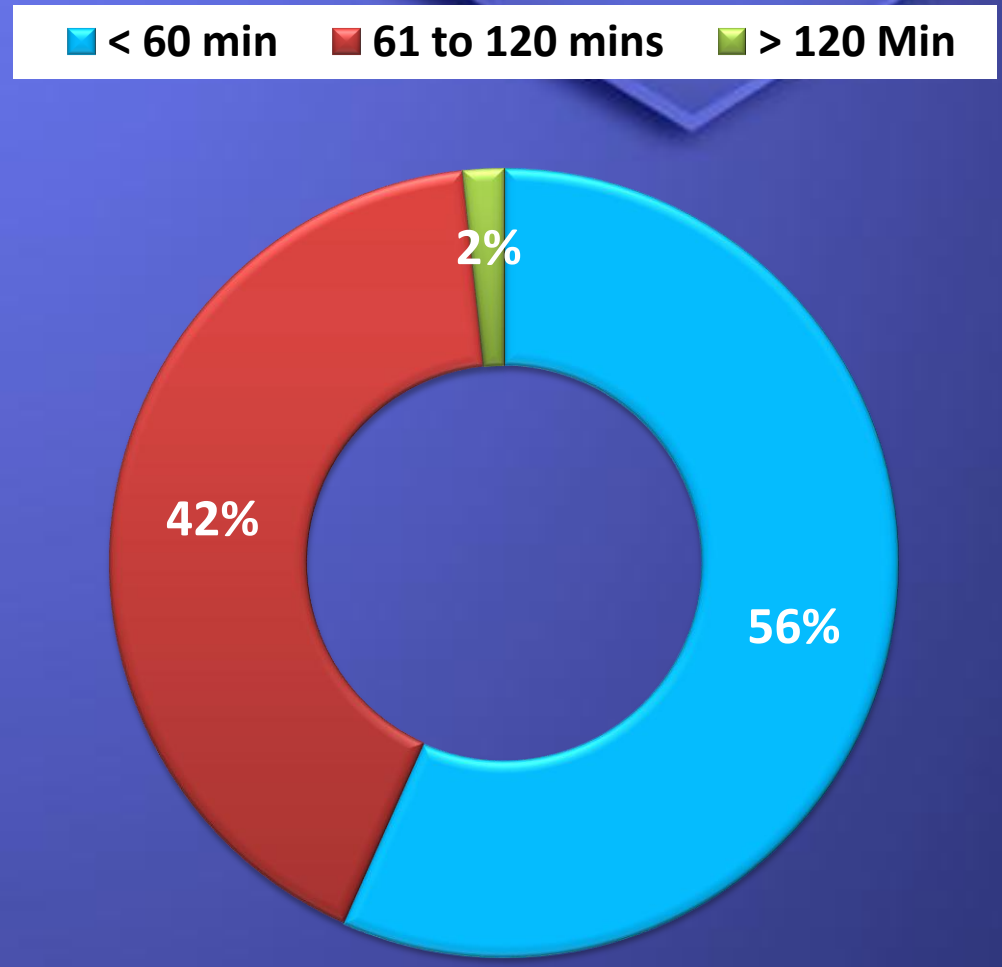


Ho 4 Rejected, z-Value 2.51 > 1.96 (95% C I)

Before



After



Limitations

Time has been rounded off to nearest minute.

Patients who meet the doctor before billing could not be included.

Waiting time for each doctor could not be calculated separately due to time and other resource constraint.

Glimpses Part 1







Glimpses Part 2

Conclusion

Six Sigma an effective tool

Significant reduction in TAT

Preliminary quality improvement project


THANK YOU!