



Time Motion Study to streamline process flow in Healthcheck department of Multispecialty hospital in Mumbai

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INTRODUCTION

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This research **aims** to conduct a detailed time motion study to assess current process flows and waiting times within the Health Check Department

02

Waiting time refers to the duration patients spend awaiting various medical services, from initial registration to diagnostic tests and consultation

03

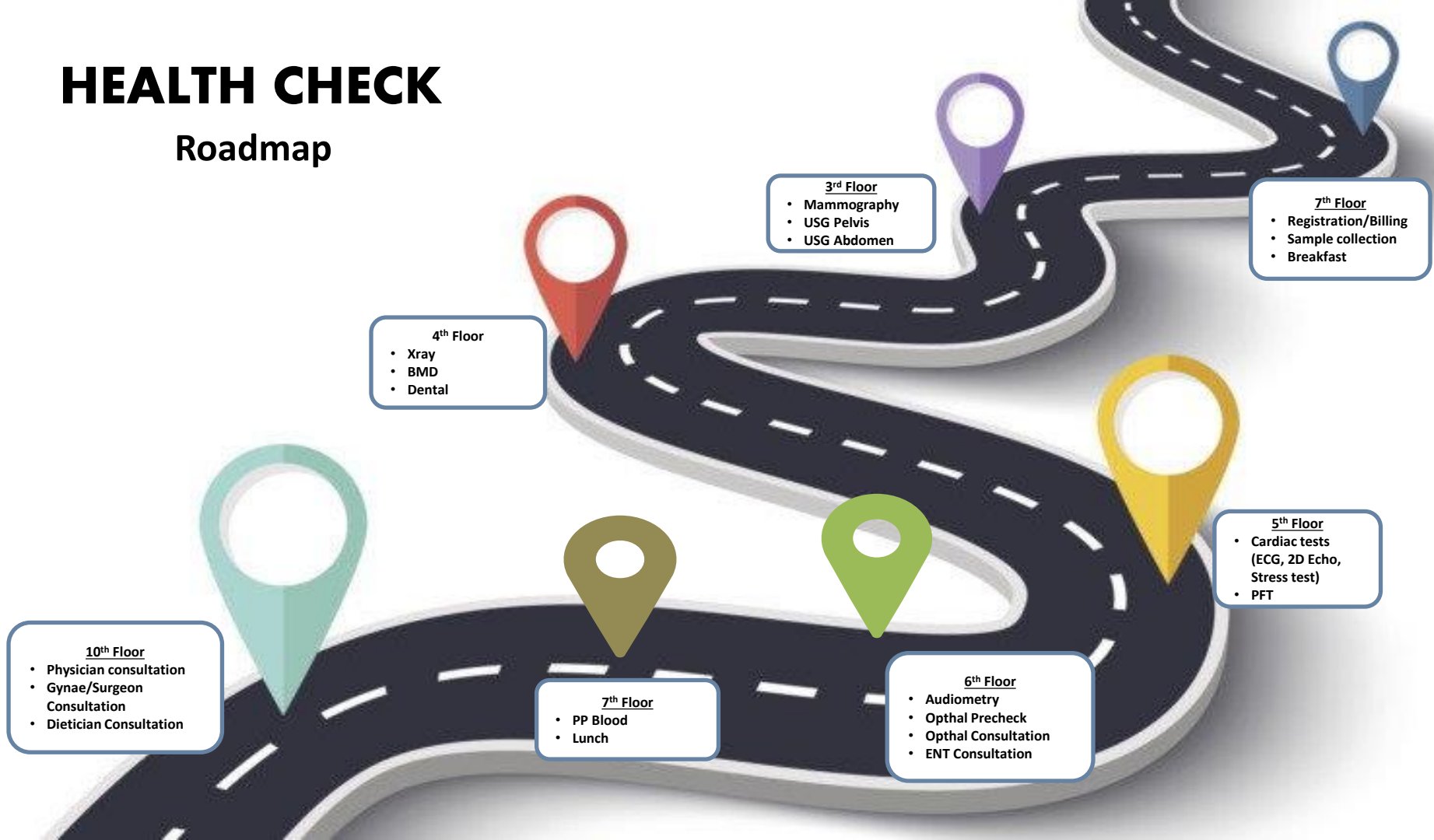
The primary **purpose of this research** is to optimize process flows, identify factors leading to prolonged waiting times and propose targeted interventions through root cause analysis

04

The health check department offers various health packages, of which 11 packages are taken in this study

HEALTH CHECK

Roadmap



Literature review

01

A study on optimisation of master health checkup process at a multispecialty hospital in Coimbatore

Dr. Kannan V

Length of stay at hospital is 8hrs, Total service time 2.57hrs, waiting time 5hrs and Time taken for registration is 57mins.

Future state VSM estimates to reduce length of stay to 5hrs, Total service time 2.28hrs and Waiting time to 2.72hrs.

02

Improving patient's waiting time at a health screening center

N. Junior Sundresh

Mean waiting time of ECG, Dietician consultation, X-ray, PFT are less than 15 minutes. Diagnostics test like ECHO, USG, TMT take 33.55, 44.45, 48.95 minutes respectively. Physician consultation took 45.5 minutes mean waiting time, maximum 90 minutes waiting was recorded

03

An empirical study on managerial issues in Apollo preventive health check department (Gandhinagar)

Dr. Pramod, Dr. Jagadeesha

Staff communication is the most important factor which manipulate of patient satisfaction with health care services in a health care organization. Communication with patients can greatly affect the healing process.

Clear, communication is vital to delivering service satisfactions in the hospital setting.

04

Improving patient waiting time at a health screening centre in Thailand Wongsammache, Weerawat

Policy 1: As-is terms. Policy 2: The entire abdomen should only undergo one ultrasound examination. Policy 3: Provide diagnosing doctors to Station 6 based on a first-come, first-served schedule. **Policy 4: Arrange for patients to arrive at different times of the day.** Policy 5: Enact all policies at the same time.

Research Objectives



Objective #1

To evaluate department-wise process time and waiting time



Objective #2

To evaluate health package wise waiting time

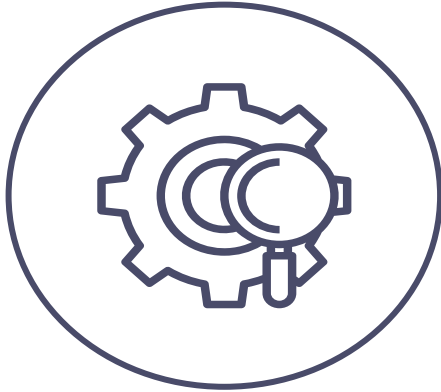


Objective #3

To analyze staff survey to identify administrative factors leading to prolonged waiting time



Methodology



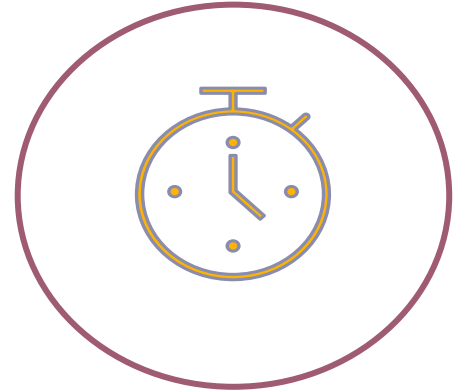
Research Question:

What are the factors contributing to increased waiting time in the health check?



Study Design:

Cross-sectional observational study



Duration of Study

5 weeks
(3 weeks – Data collection
2 weeks – Data analysis)

Methodology



Sample size:
50 Patients
(3-4 patients were personally
tracked each day for 3 weeks)

Sample technique
Convenience sampling



Research approaches

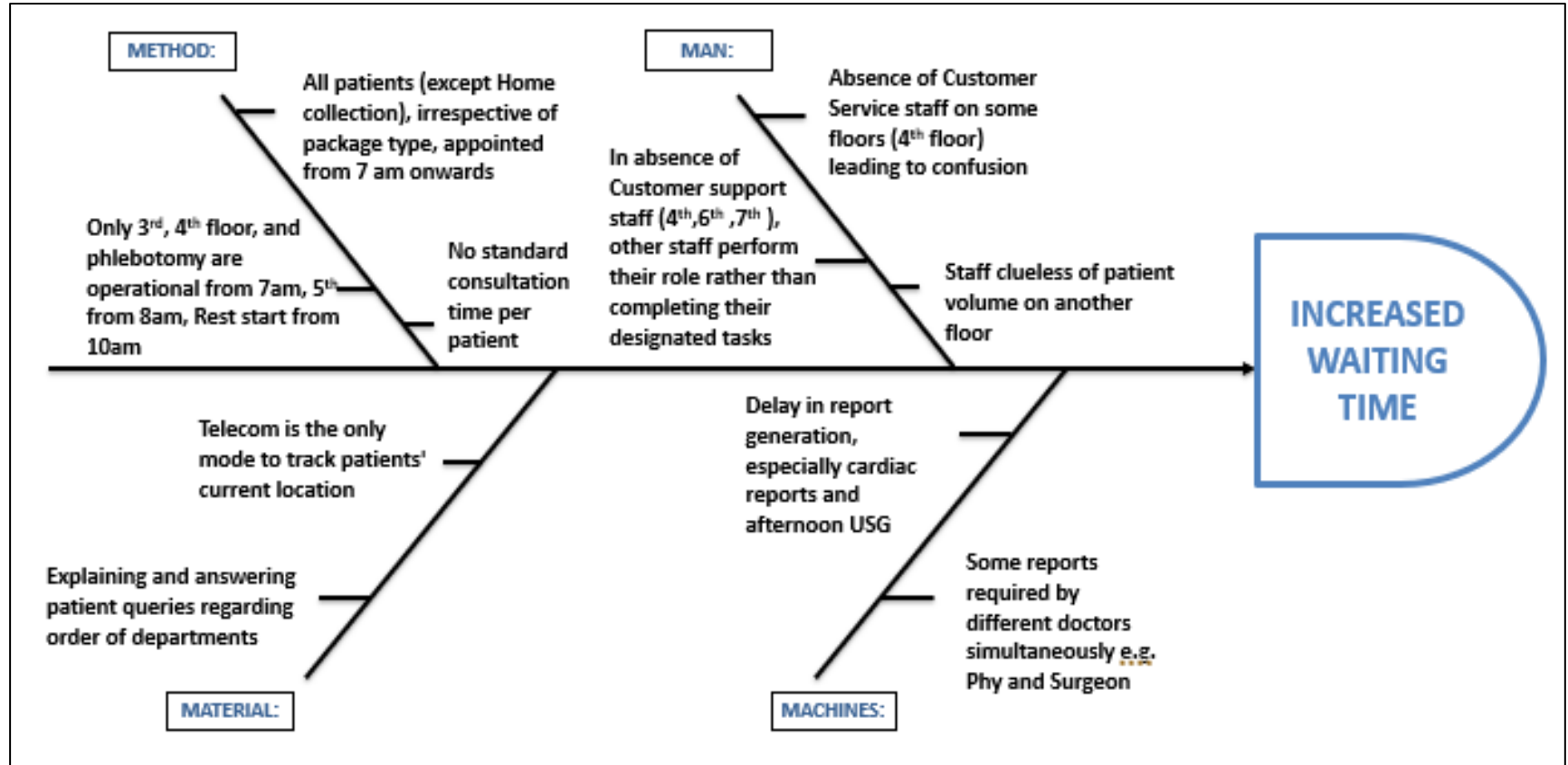
Both Qualitative and
Quantitative approaches for
data collection used in the
study



Study Instrument

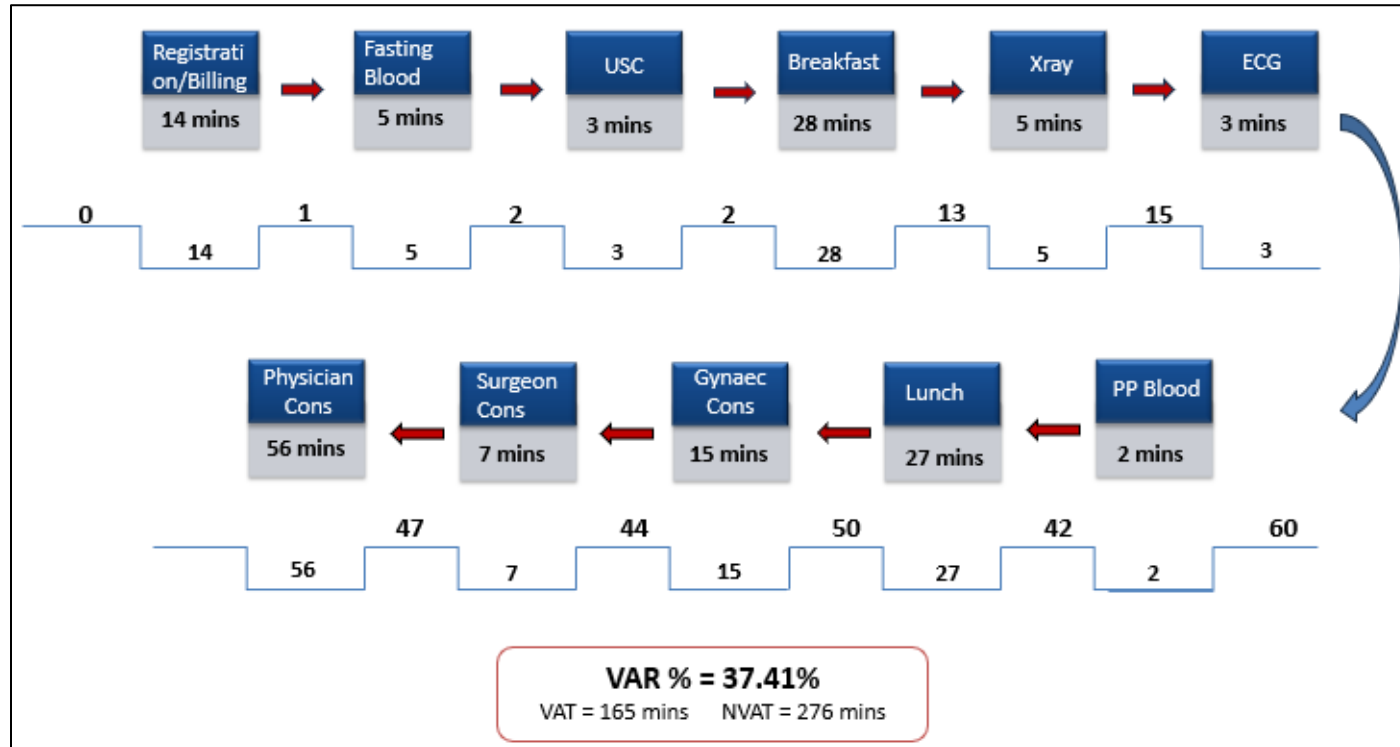
- **Unstructured Questionnaire** formulated to conduct staff survey
- **Value stream map** for process mapping

Root Cause Analysis (Ishikawa/Fishbone/Cause-effect)

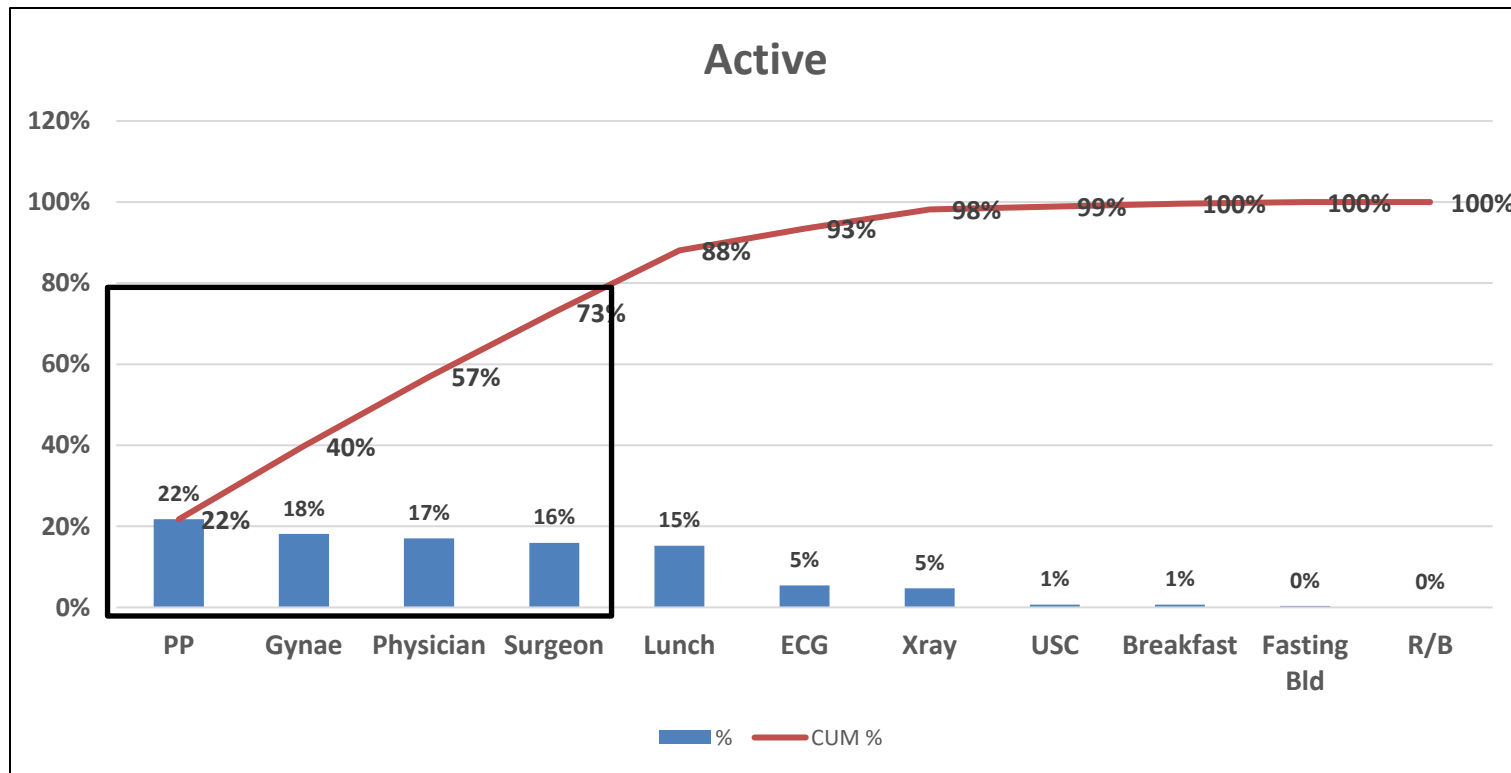


Value Stream Mapping

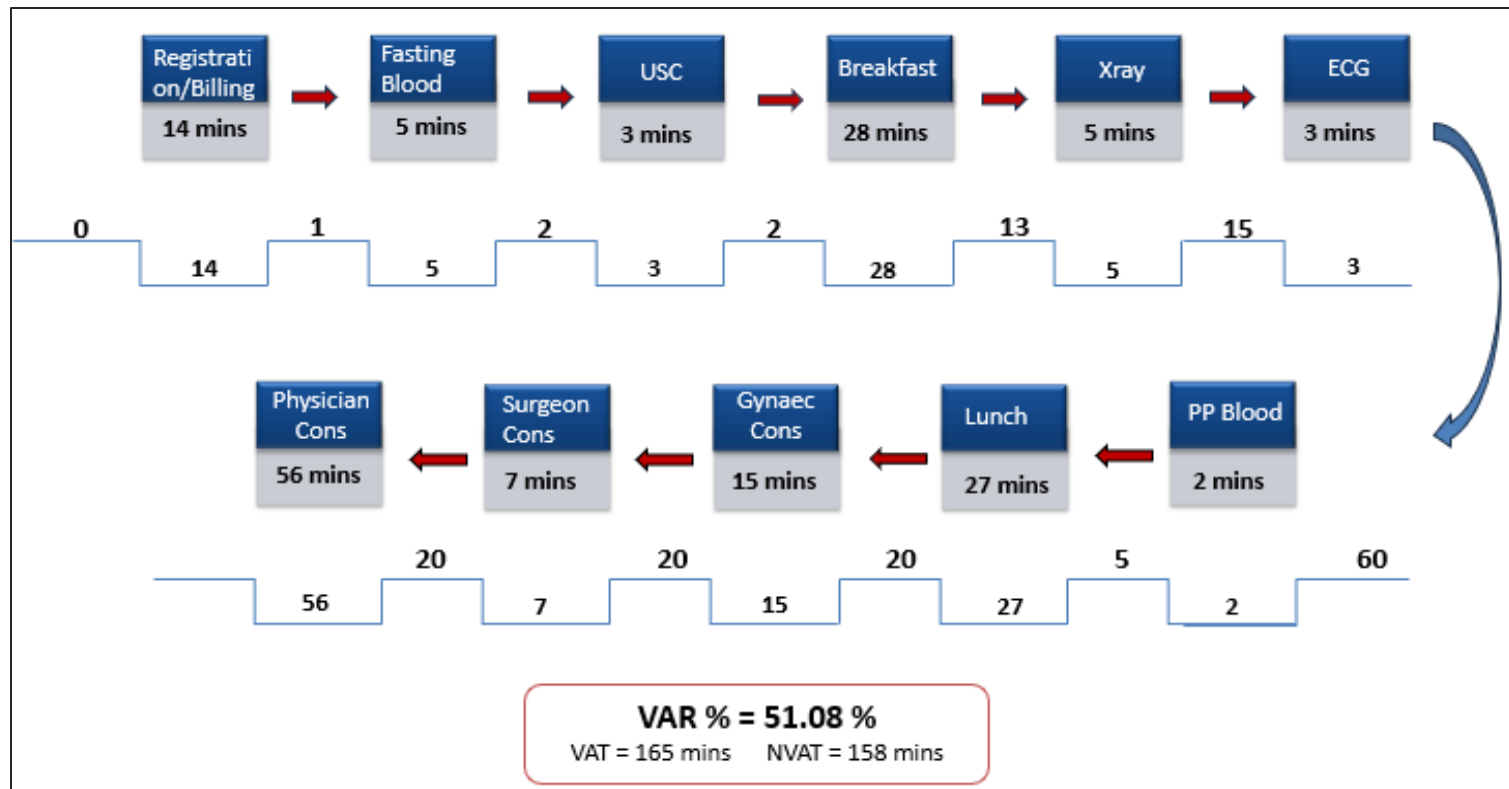
Active Health Package - Current



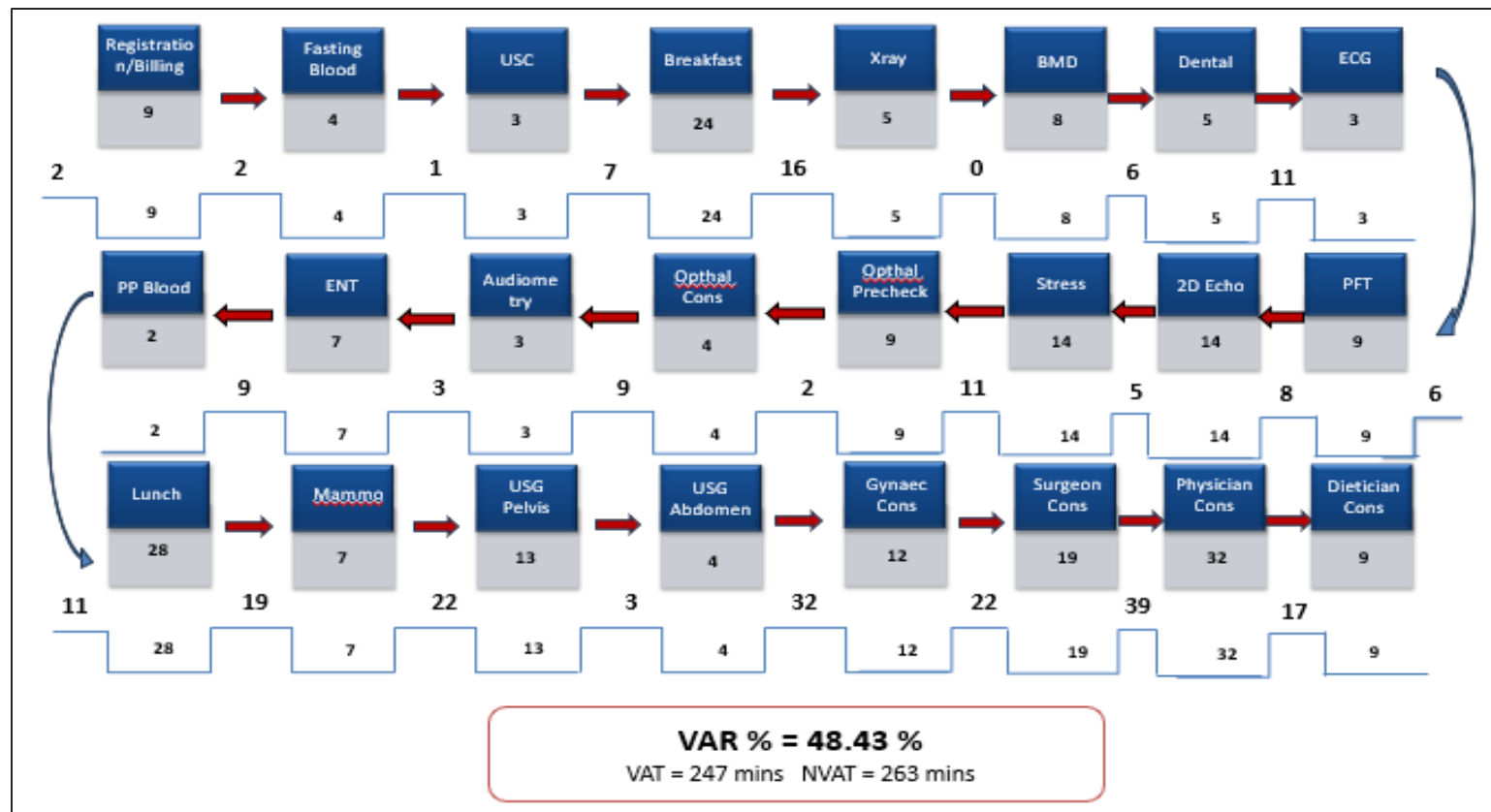
Pareto Chart on Procedure wise Waiting time



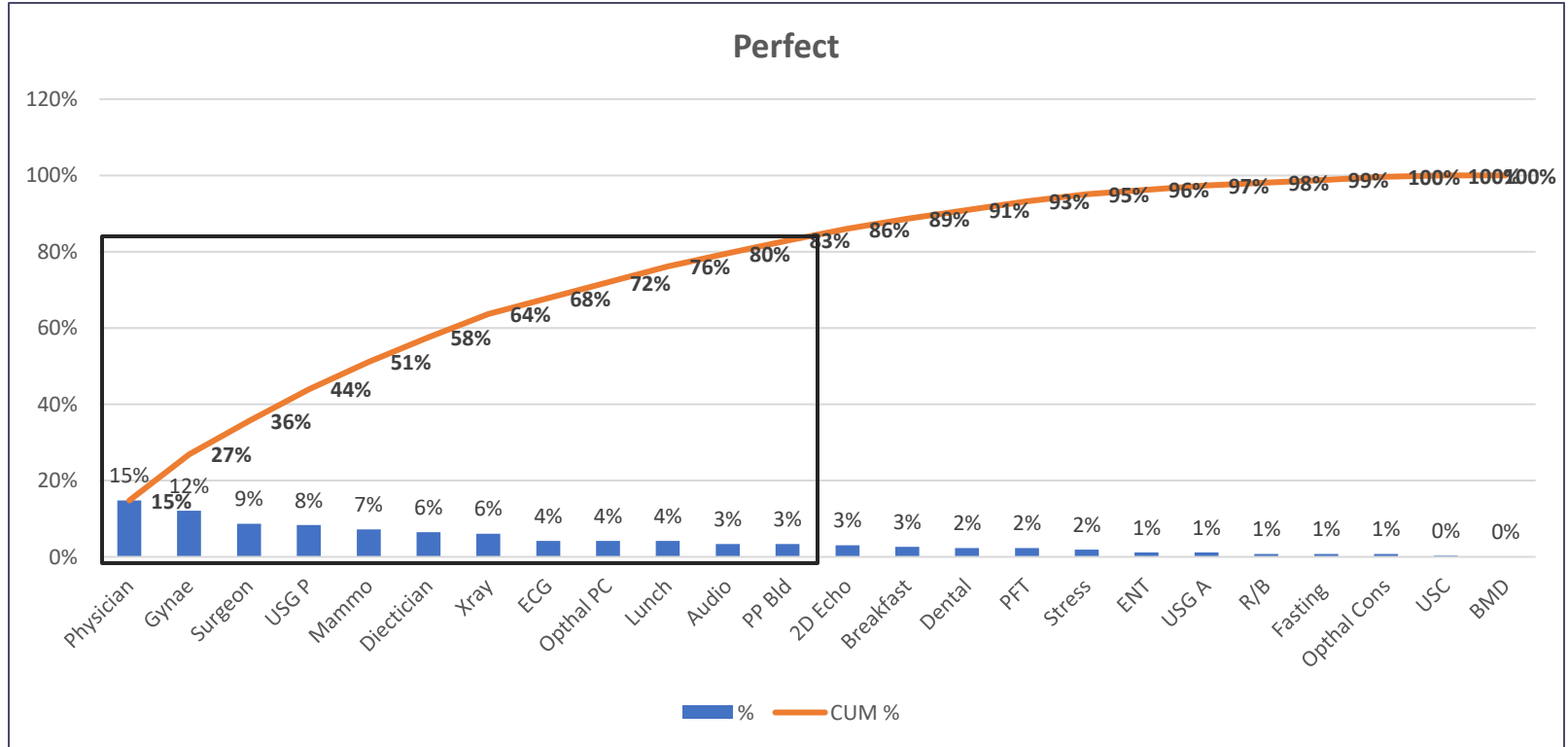
Active Health Package - Future



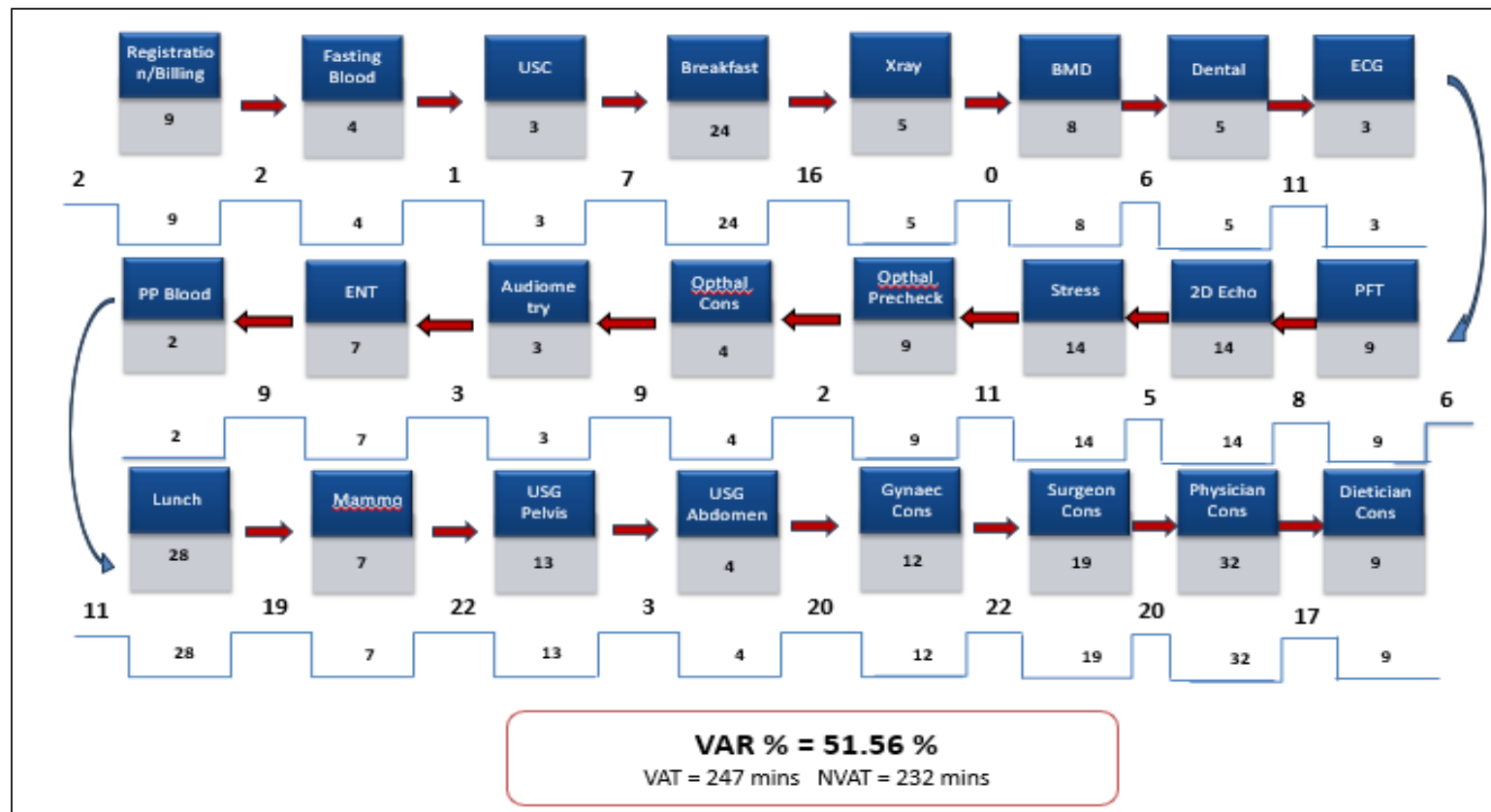
Perfect Health Package - Current



Pareto Chart on Procedure wise Waiting time

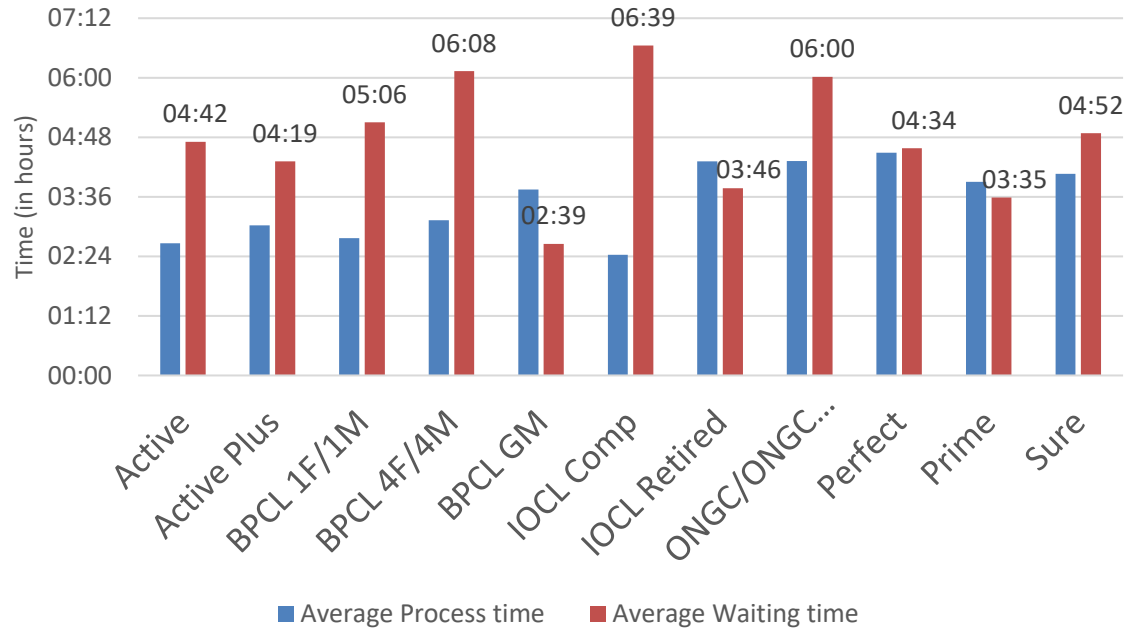


Perfect Health Package - Future



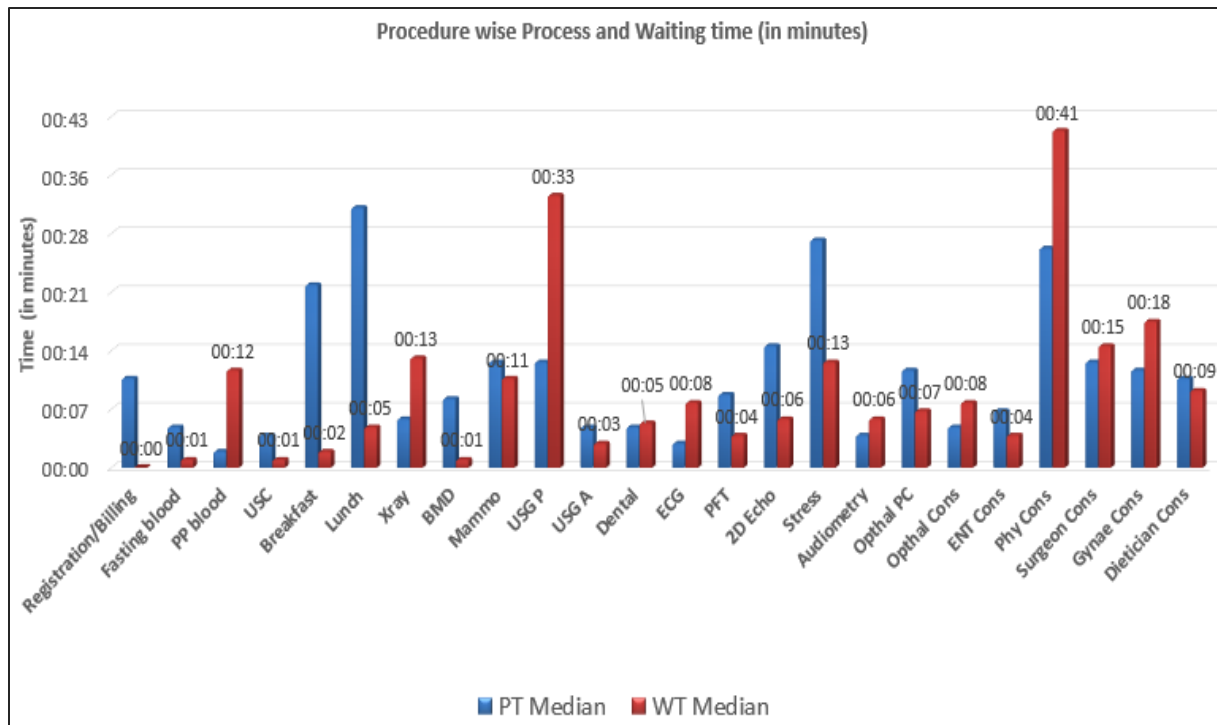
1. Health Package wise Waiting time

Health Package-wise Process and Waiting time (in hours)



Health Package	Average Process time	Average Waiting time
Active	02:39	04:42
Active Plus	03:01	04:19
BPCL 1F/1M	02:46	05:06
BPCL 4F/4M	03:07	06:08
BPCL GM	03:45	02:39
IOCL Comp	02:26	06:39
IOCL Retired	04:19	03:46
ONGC/ONGC Jeevansathi	04:19	06:00
Perfect	04:29	04:34
Prime	03:54	03:35
Sure	04:03	04:52

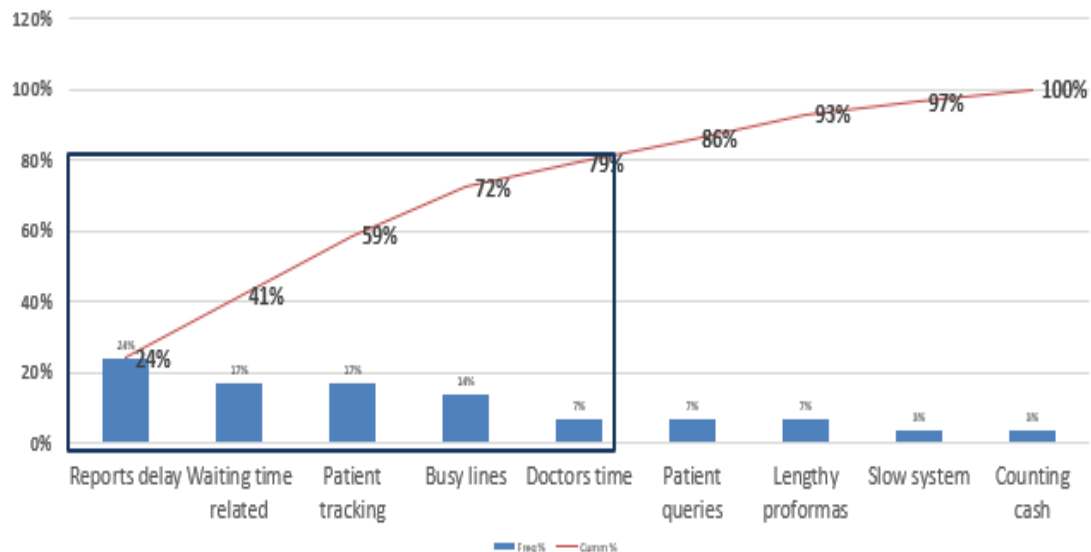
2. Procedure wise Waiting time



Procedures	Process time	Waiting time
Registration/Billing	00:11	00:00
Fasting blood	00:05	00:01
PP blood	00:02	00:12
USC	00:04	00:01
Breakfast	00:22	00:02
Lunch	00:32	00:05
Xray	00:06	00:13
BMD	00:08	00:01
Mammo	00:13	00:11
USG P	00:13	00:33
USG A	00:05	00:03
Dental	00:05	00:05
ECG	00:03	00:08
PFT	00:09	00:04
2D Echo	00:15	00:06
Stress	00:28	00:13
Audiometry	00:04	00:06
Opthal PC	00:12	00:07
Opthal Cons	00:05	00:08
ENT Cons	00:07	00:04
Physician Cons	00:27	00:41
Surgeon Cons	00:13	00:15
Gynae Cons	00:12	00:18
Dietician Cons	00:11	00:09

3. Administrative factors increasing waiting time identified through staff survey

Staff survey - Challenges faced due to administrative factors leading to prolonged WT



Administrative factors	Frequency	Freq %	Cumulative freq %
Reports delay	7	24%	24%
Waiting time related	5	17%	41%
Patient tracking	5	17%	59%
Busy lines	4	14%	72%
Doctors time	2	7%	79%
Patient queries	2	7%	86%
Lengthy proformas	2	7%	93%
Slow system	1	3%	97%
Counting cash	1	3%	100%
Total	29		

Discussion

1. The Current Value Stream Map and Pareto analysis for Active Health package identified following areas for improvement to reduce waiting time –

- Post Prandial blood collection
- Gynecologist consultation
- Physician consultation
- Surgeon consultation

“The study of optimization of master health checkup process at a multispecialty hospital in Coimbatore” (2017), identified the following areas of improvement in their current value stream map for reducing waiting time – Registration process, TMT/Echo, Sequencing the process.

2. Health package wise waiting time ranges from approximately 3hrs to 7hrs, and was highest for IOCL Comprehensive package. No specific appointment scheduling followed.

“Improving patient waiting time at a health screening centre in Thailand” suggests in Policy 4 to arrange for patients to arrive at different parts of the day.



Discussion

3. For procedure wise process and waiting time, the median waiting time was seen highest for doctor consultation specifically for Physician consultation (41mins), followed by USG Pelvis (33mins), X-ray (13mins) , and Post prandial blood (12mins).

N. Junior Sundresh, (2016), in the paper titled “A study on total waiting time with respect to preventive health checkup programme” identified that Physician consultation took 45.5 mins waiting time, 44.45 mins for USG and less than 15 mins for X-ray.

4. The main administration factors identified by Pareto analysis which are leading to increased waiting time as per staff survey data are Delay in receiving reports (especially cardiac and afternoon USG), Diverting patients in case of high waiting time, Patient tracking, Busy telecom lines, and inconsistency in doctors reporting and consultation time



Recommendations to reduce Waiting time:

1

▪ Method:

- ✓ Health packages for this study can be categorized as Short and Long packages for ease of understanding (Up to 15 tests - Short package, more than 15 tests – Long package)
- ✓ For Short packages, registration and billing should start from 9-10am onwards
- ✓ There should be standard consultation time per patient
- ✓ Home collection can be made mandatory for short packages
- ✓ Home collection patients can be appointed as follows:
 - Short package: 11am – 12pm onwards
 - Long packages: 8am onwards
- ✓ Appointments should be given in slots, preferably in an interval of 15mins
- ✓ Recommended appointment schedule as per health package is as follows:

Health Package	Normal	Home collection
Active	10 am	12:30 pm
Active Plus	10 am	12 pm
BPCL 1F/1M	10 am	11:30 pm
BPCL 4F/4M	10 am	11:30 pm
BPCL GM	9 am	10 am
IOCL Comprehensive	10 am	12 pm
IOCL Retired	10 am	12 pm
ONGC/ ONGC Jeevansathi	9 am	10 am
Perfect	7 am	8 am
Prime	9 am	10 am
Sure	7 am	8 am

Recommendations to reduce Waiting time (contd.):

2

- **Man:**

- ✓ At present, there are 5 customer service staff. As per the floor timings, their duty time should be as follows:

Floor	No. of Staff	Duty time
7 th , 3 rd , 4 th	3 (one each)	7am to 3pm
5 th	1	9am to 5pm
6 th , 10 th	1*	10am to 6pm

*1 each for 6th and 10th floor, 1 staff for assisting VIP patients

- ✓ Dedicated customer service staff on all floors
- ✓ 1 staff can scan and upload provisional reports in the afternoon (USG and Cardiac) which are generally required by consultants simultaneously.

3

- **Material:**

- IEC material in waiting areas (posters, videos) on information about online registration and guidelines for health checkup
- A dedicated desk for speech to text activity for typists
- Address staff difficulties hindering timely generation of reports (especially afternoon cardiac and USG reports)

Recommendations to reduce Waiting time (contd.):

4

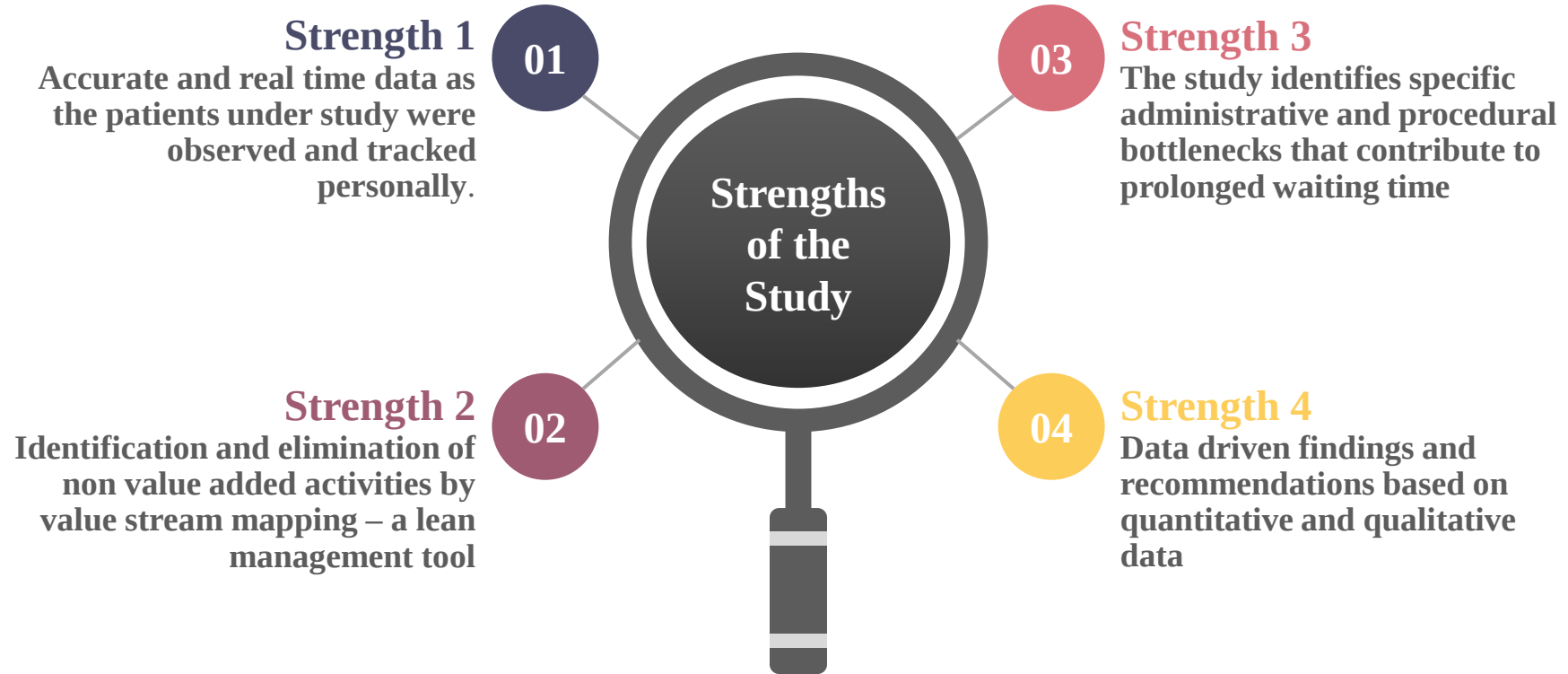
▪ Machine

- Health check departments constitute of various tests across floors which requires flexibility in lining patients for each test, hence token system is not applicable here
- Provision of online Physician and Dietician consultation
- Train doctors to use computer to access provisional reports when required during consultation
- Patient tracking system using RFIDs for health check patients to:
 - Easily identify health checkup patients
 - Find out floor with high/low patient volume at any given point of time
 - Guide patient on where to go next

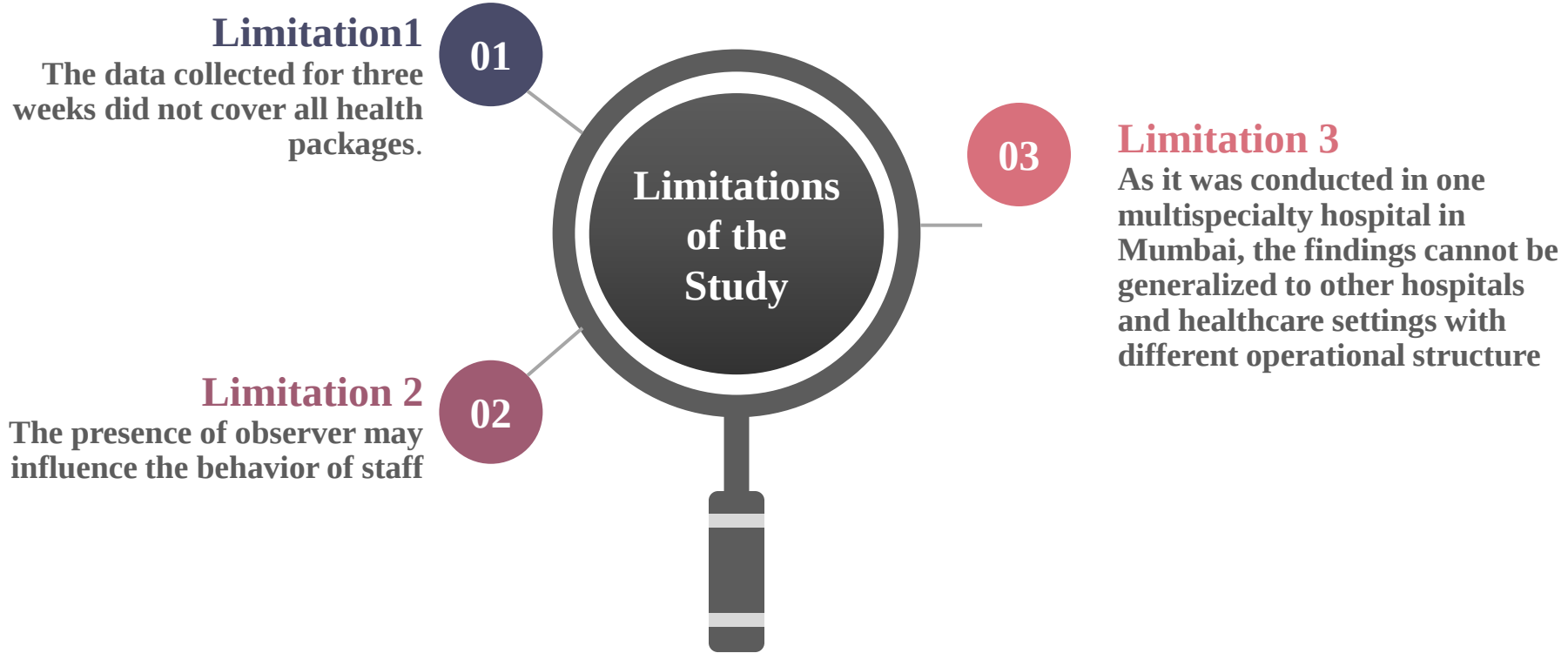


[ICEGEN | Patient Tracking Solution – 'Patient Mantra' for Apollo Hospitals – RTLS/RFID based](#)

STRENGTHS OF THE STUDY



LIMITATIONS OF THE STUDY



Conclusion

- The purpose of this study was to reduce waiting time in the health check department by identifying various factors leading to increased waiting time, and develop targeted solutions.
- Some of the administrative factors such as Delay in reports generation, Busy telecom lines, Patient tracking ,and Doctors reporting and consultation time increases the waiting time.
- Scheduling appointments as per health package, setting a standard consultation time, incorporating a patient tracking software are some of the ways in which waiting time can be reduced significantly.

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THANKYOU

Questions?

