STRENGTHENING PRIMARY CARE THROUGH CNS-FM COLLABORATION

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WM CNS
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Challenges

Demographic Data

Population ratio in 2025

- Working age (15-64) : Elderly = 3:1
- Elderly dependency ratio in 2041 would be increased by 3 times as the figure in 2011

Social & Family Structure

Household composition of elderly:

- Living alone: 12.7%
- Living with spouse: 23.6%

Source: Census and Statistics Department 2012

Source: Hong Kong Government 2012b

Impacts

Ageing

- Home bounded
- Socially isolated
- Difficulties in self-care
- Lack of caregivers
- Geographically constrained
- Lack of escort or special transportation to seek medical advice

Health Care System

- Elderly population consumes 6 times the resources in terms of inpatient bed-days
- And 9 times in general specialty bed utilization than the youngers

Source: Food and Health bureau 2010a

Transformation of Community Health Care Services through Workflow Improvement

Introduction

Background

- 1 309 cases attended PYNEH A&E with same day discharged home due to UTI, Respiratory Illness, Cellulitis or Pressure Ulcer
- 43 cases were transported by ambulance in 2013

Source: CDARS

Implication

- Transport for home bounded patients with episodic illness to access Family Medicine (FM) clinics poses a common problem in the community
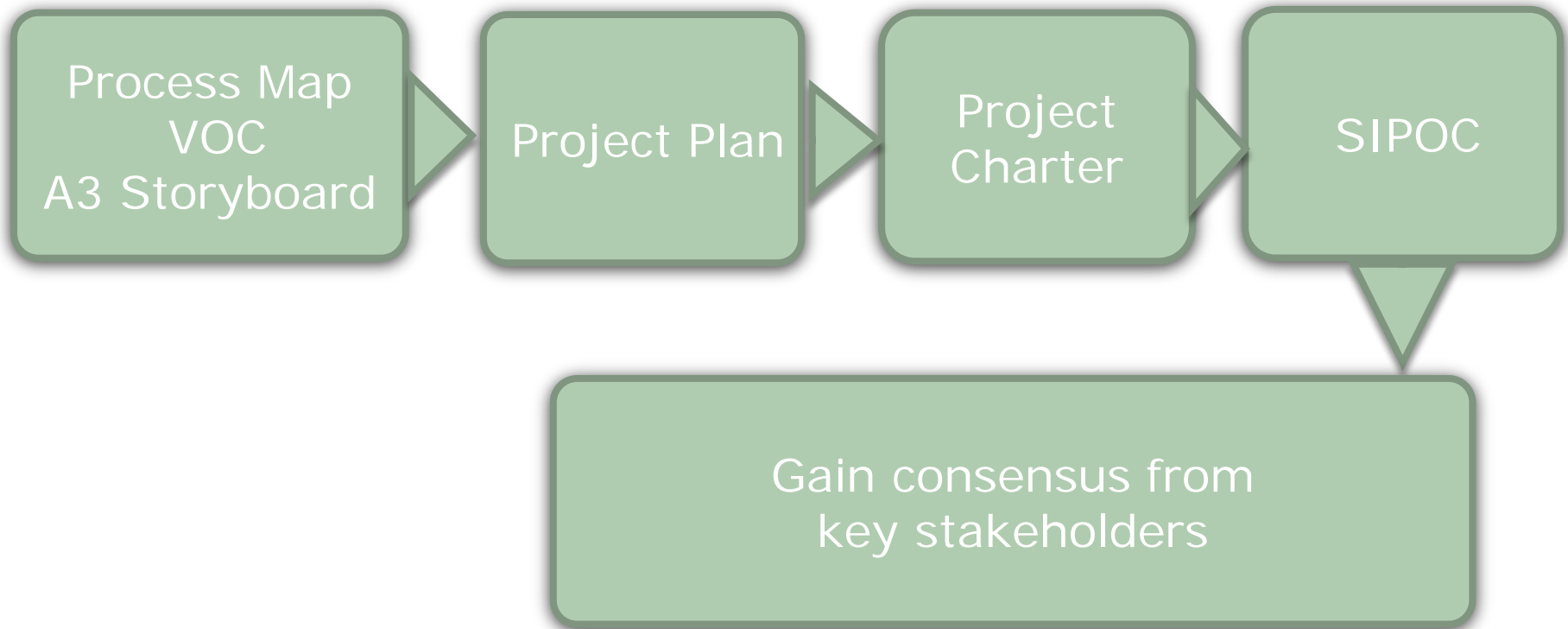
Objectives

- Mobilize resources to enhance gatekeeping in the community
- Redesign process flow
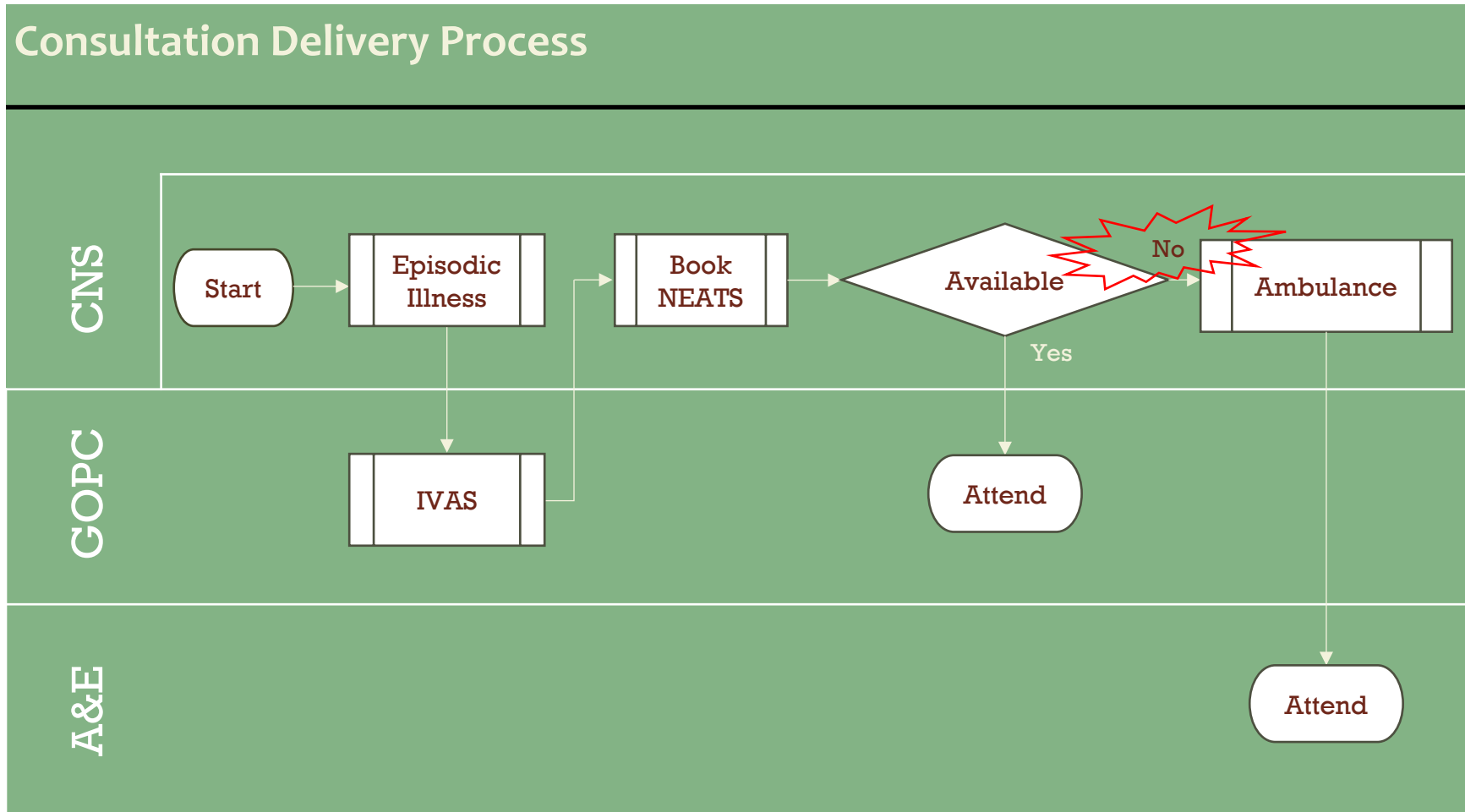- Create a CNS Tele-consultative Trial Program in collaboration with FM

Targets

- Reduce unnecessary A&E attendance
- Provide a timely medical management within primary level of care
- Improve patient satisfaction on primary health care services in the community of HKEC
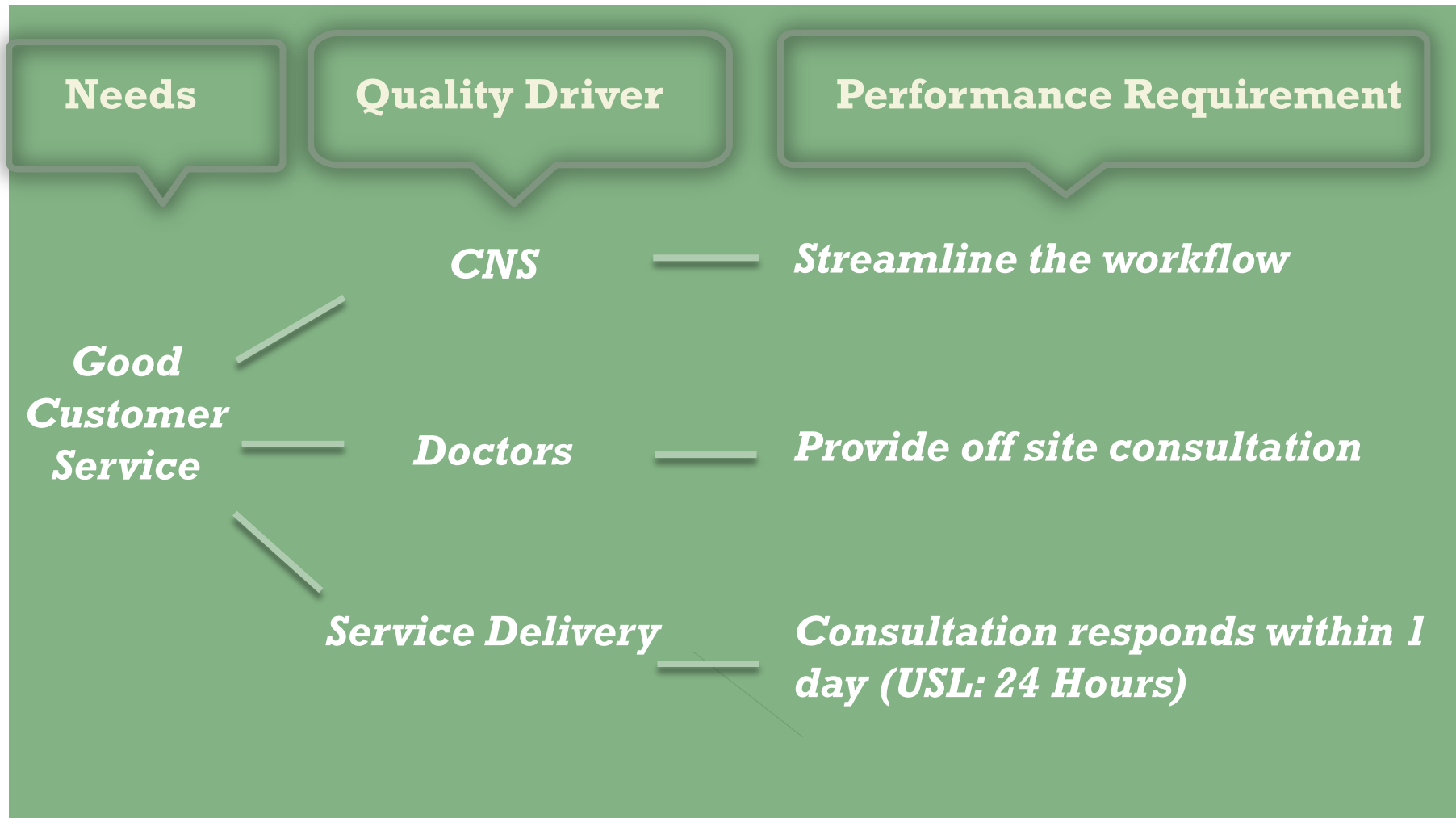
Define Process

Process Map
VOC
A3 Storyboard

Project Plan

Project
Charter

SIPOC

Gain consensus from
key stakeholders

Process Map

Consultation Delivery Process

CTQ Tree on VOC

Needs	Quality Driver	Performance Requirement
	CNS	Streamline the workflow
Good Customer Service	Doctors	Provide off site consultation
	Service Delivery	Consultation responds within 1 day (USL: 24 Hours)

A3 Storyboard

Reason for choosing issue:
- Long waiting time NEATS ~ 92.55 days for HKEC OP service (CDARS)

↓

Current Conditions
HKEC home-bounded patients with episodic illness need to attend AED

Problem Statement –
Process flow

↓

Goal/Target Condition
Total time of workflow process is expected to take < 1 day

Analysis
Fishbone
FMEA

↓

Countermeasure Options
CNS Tele-consultation to FM

↓

Evaluation of Options
1. Consultation delivery
2. Patient Satisfaction
3. A&E attendance rate
4. Unplanned admission rate
5. LOS
6. Cost saving

Project Plan

Phases	Tasks and Timelines Activity	Assigned to:	Start Date:	End Date:	Status:	Project Review Date
Define	Project's Customer CTQ Project Charter SIPOC Stakeholder Analysis		01-Aug	30-Sep		
Measure	FMEA Data collection Update process map		01-Sep	31-Oct		
Analyze	Process capability DPMO		01-Nov	31-Oct		
Improve	Refine process flow Refine shared protocols Post data collection		01-Nov	31-Oct		
Control	Brainstroming Control Plan Control Data Collection		quarterly			

Team Leader:	MAK Mei-yi	On Plan/On Schedule
Team Members:	CNS & FM colleagues	Behind Plan, with effort can return to schedule
		Behind Plan
Champion:	Key stakeholders	Task Completed

Project Charter

Project Scope

HKEC home bound patients ≥ 18 years old

Non-CGAT covered RCHE

UTI, Respiratory Illness, Skin/Wound Infection

Limitations

Significant comorbid conditions

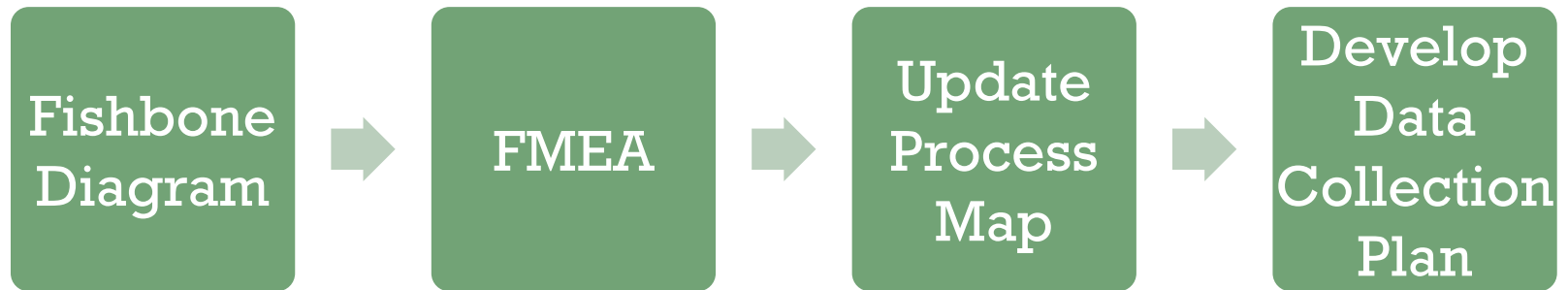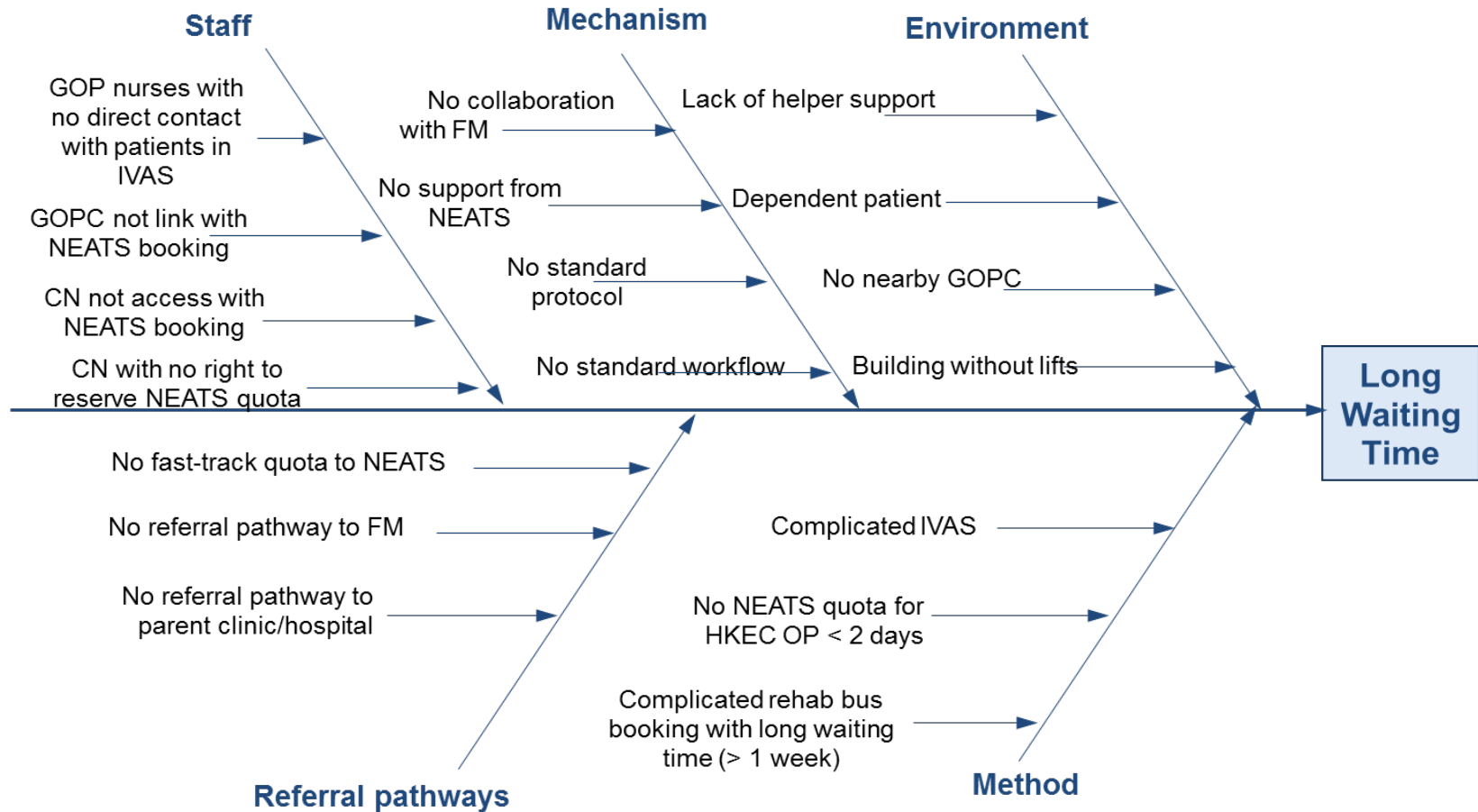Poor social support without care givers

Doubtful diagnosis

SIPOC

Suppliers	Inputs	Process	Outputs	Customers	Requirements
•CNS •FM	•Manpower •IT support •Medical equipment		•Timely delivery of service •Efficiency in the use of resources	•HKEC Home-bounded patients	•Customer satisfaction •Expected service delivery •Reduced backlog through follow up

CN screening → APN assessment + specimen collection → Tele-consultation to FM → Same day Service delivery → Same day collection of medication

Stakeholder Analysis

Stakeholders	Expectations	Concerns
Senior Management	Transformation of services	Feasibility (Resources; Quality)
Doctors	New service model	Trustworthiness
Nurses (CNS)	Workflow improvement	Manpower
Nurses (GOPC)		Manpower
Users (Patient/Caregiver)	Better service delivery	Sustainability

Measure

Fishbone Diagram	→ FMEA	→ Update Process Map	→ Develop Data Collection Plan

Causes of Long Waiting Time

Staff

GOP nurses with no direct contact with patients in IVAS

GOPC not link with NEATS booking

CN not access with NEATS booking

CN with no right to reserve NEATS quota

No fast-track quota to NEATS

No referral pathway to FM

No referral pathway to parent clinic/hospital

Referral pathways

Mechanism

No collaboration with FM

No support from NEATS

No standard protocol

No standard workflow

Environment

Lack of helper support

Dependent patient

No nearby GOPC

Building without lifts

Complicated IVAS

No NEATS quota for HKEC OP < 2 days

Complicated rehab bus booking with long waiting time (> 1 week)

Method

Long Waiting Time

Fishbone Diagram

FMEA

Analysis Method			Completed	Investigation		%	Validation	Validation	Validation
Cause and Effect (Event) Analysis		Potential Factor	Review Date	Method	Result	Effect	Method	Date	Results
	Priority 2	Staff	01-Sep	Review CNS level of care model	PC	20%	Nurses grade mix in CNS	01/10/2014	2-tier model
	Priority 1	Mechanism	15-Oct	Check average days for NEATS	RC	60%	data from HAHO IT	20/10/2014	92.55days
	Priority 4	Environment	15-Sep	Non-amubulaotry patient	RCX	10%	CBNS database input	30/09/2014	1268 patients
	Priority 5	Method	15-Oct	Complicated GOPC phone booking system	RCX	0%	Survey	31/10/2014	2-7 days
	Priority 3	Referral pathway	31-Oct	Check ineffective referrals	RC	20%	attendance by ambulance with same day discharge home	31/10/2014	43cases
		NC - Non Contributor	IDX - Data not available			% Unexplained	20%		
		PC - Partial Contributor	RC - Root Cause						
		ID - Insufficient Data	RCX - Root Cause Not Controllable						

Update Process Map
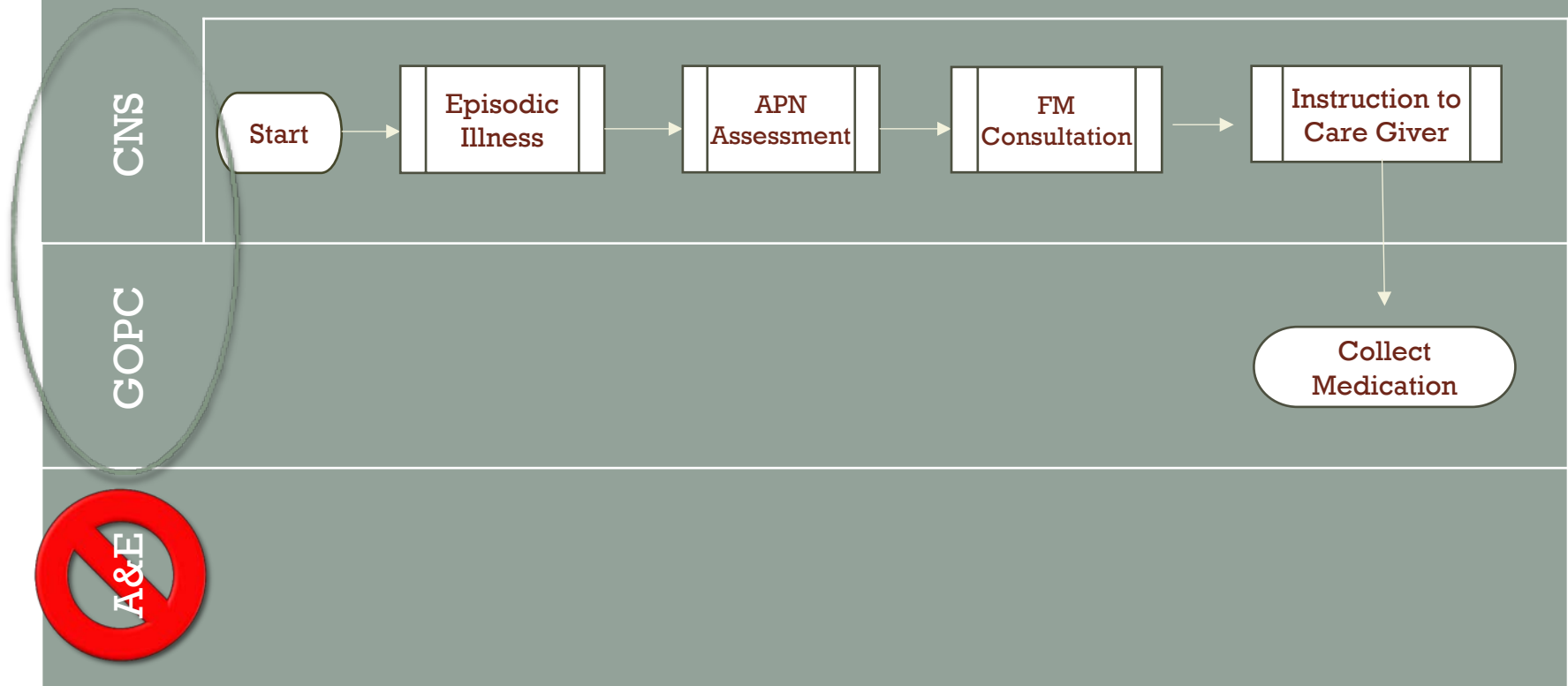
Data Collection Plan

Define What to Measure			Define How to Measure			Who will Do it?	Sample Plan			
Measure	Type of Measure	Operational Definition	Measurement or Test Method	Data Tags Needed to Stratify the Data	Data Collection Method	Person(s) Assigned	What?	Where?	When?	How Many?
Waiting Time	X attribute	CNS consultation to FM	OPAS	Time	Computer based	Project Leader	Recruited patients	PYNEH	Weekly	24 Hours

Defect Definition

Target

Defect

Initiate consultation   *Response within 24 hours*   *Response over 24 hours*

Project Results and Findings

n = 193
Mean age: 81.4

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
■ URTI / ILI		2	2	2	3	5	7	1		1		2
■ Chest Infection					2	1						
■ UTI	1	9	15	16	19	24	12	13	6	7	6	7
■ Skin/Wound infection		1				2	12	4	3	4	1	3

No. of Consultation

Project Results and Findings

- Total time of workflow process is expected to take < 1 day
- Average time of service delivery is 76 minutes

Pre- & Post-data Collection

Analysis

Process Capability Report (Before)	→	Process Capability Report (After)

	Before	**After**
DPMO	1000000	0
Cpk	-17.73	10.93
Mean	133280	82
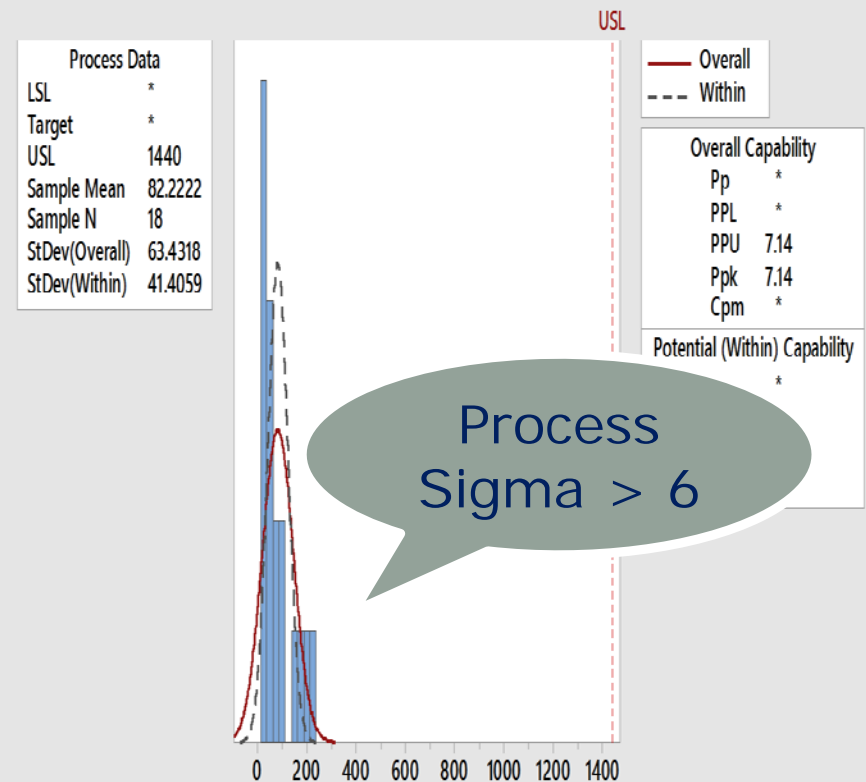
Patient Satisfaction Survey

Response Rate = 94%

	1. Shorten waiting time for consultation	2. Solve transportation problem	3. Avoid AED attendance in same illness	4. Treat the illness completely	5. Satisfy the service	6. Sustain the service
	4.3	4.3	4.3	4	4.4	4.4
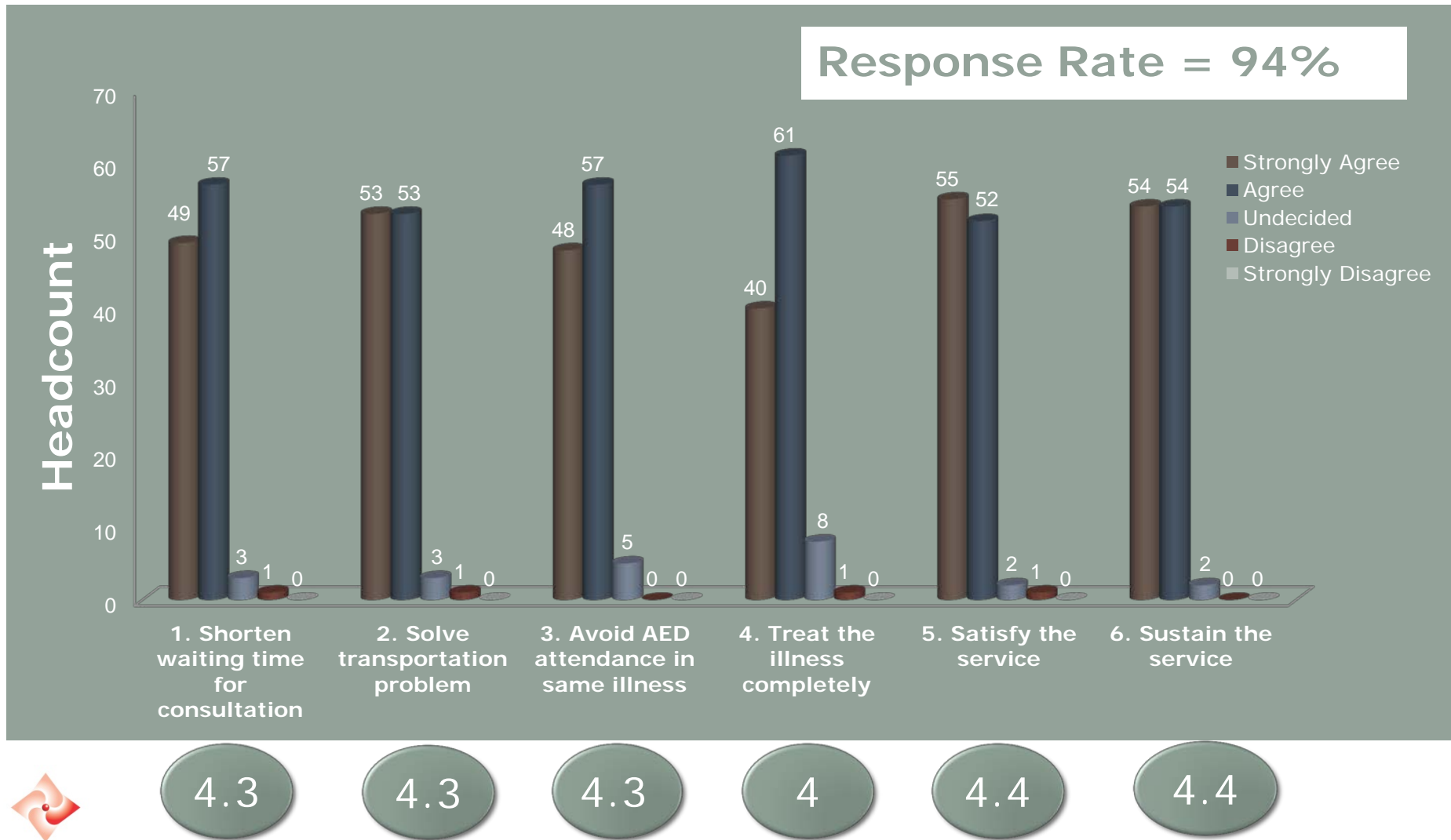
AED Attendance with Same Day Discharge Rate

n = 102

Legend: UTI, URTI / ILI, Chest Infection, Skin/ Wound Infection
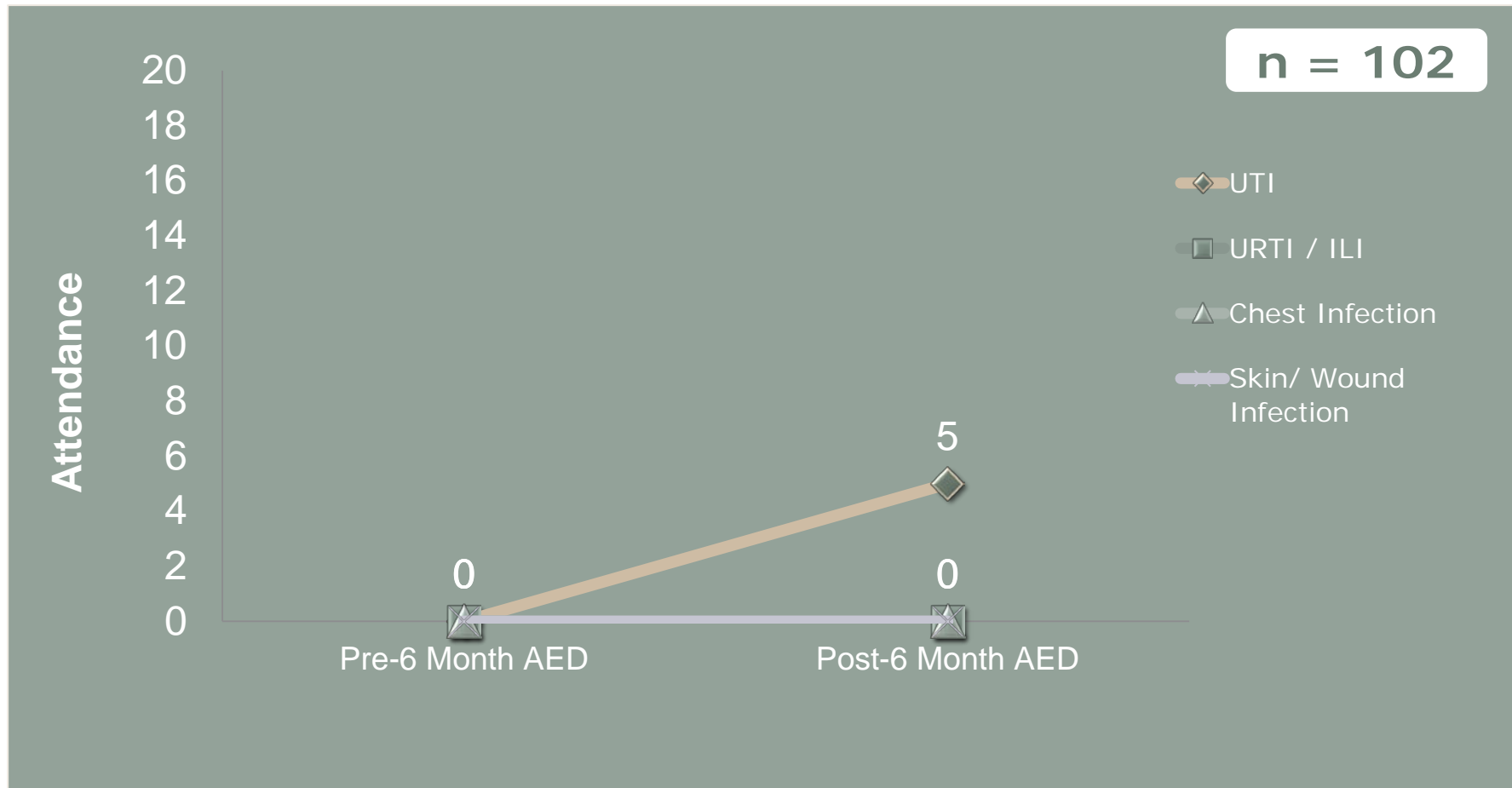
Unplanned Admission Rate
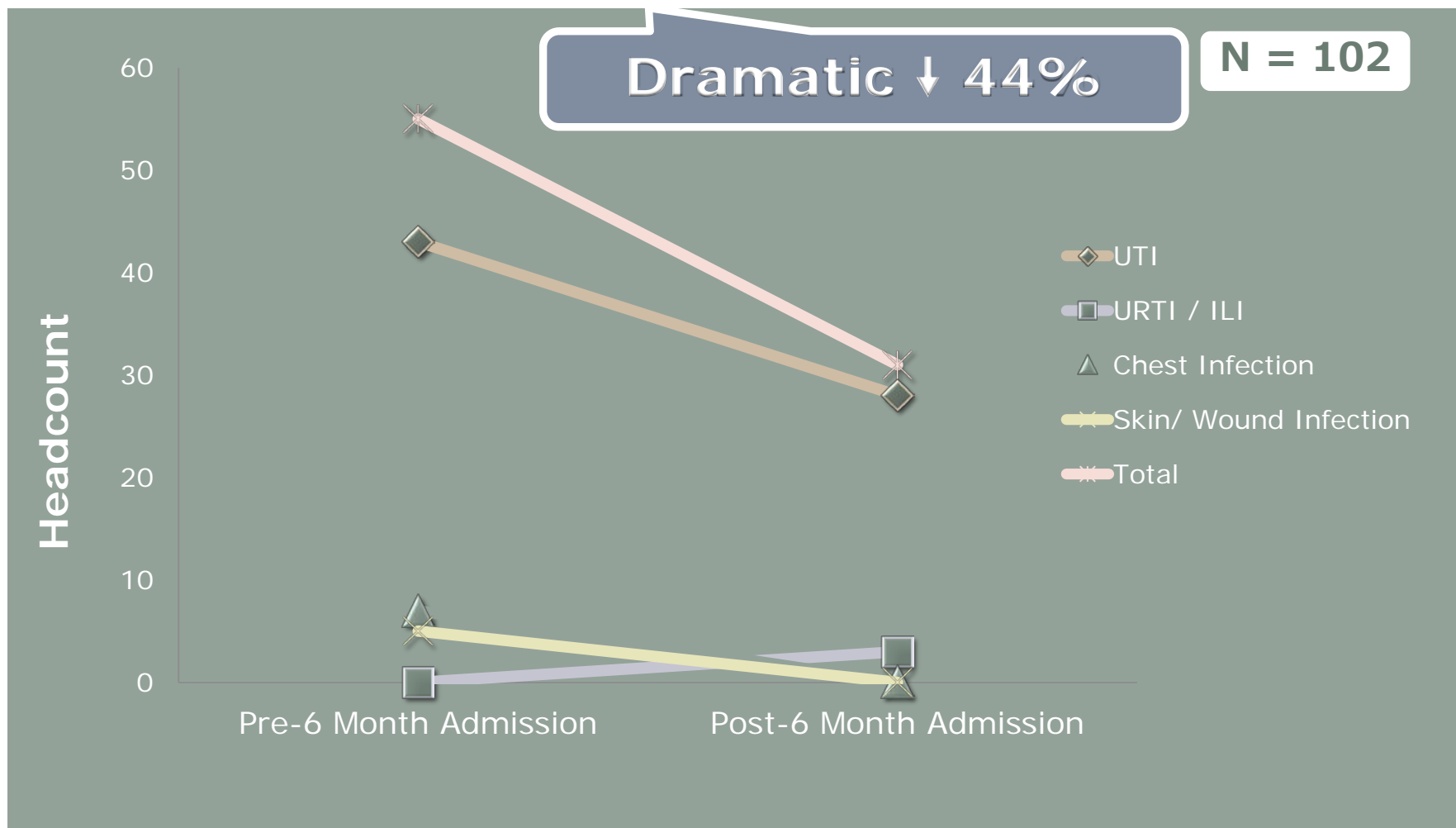
Bed-days Occupied
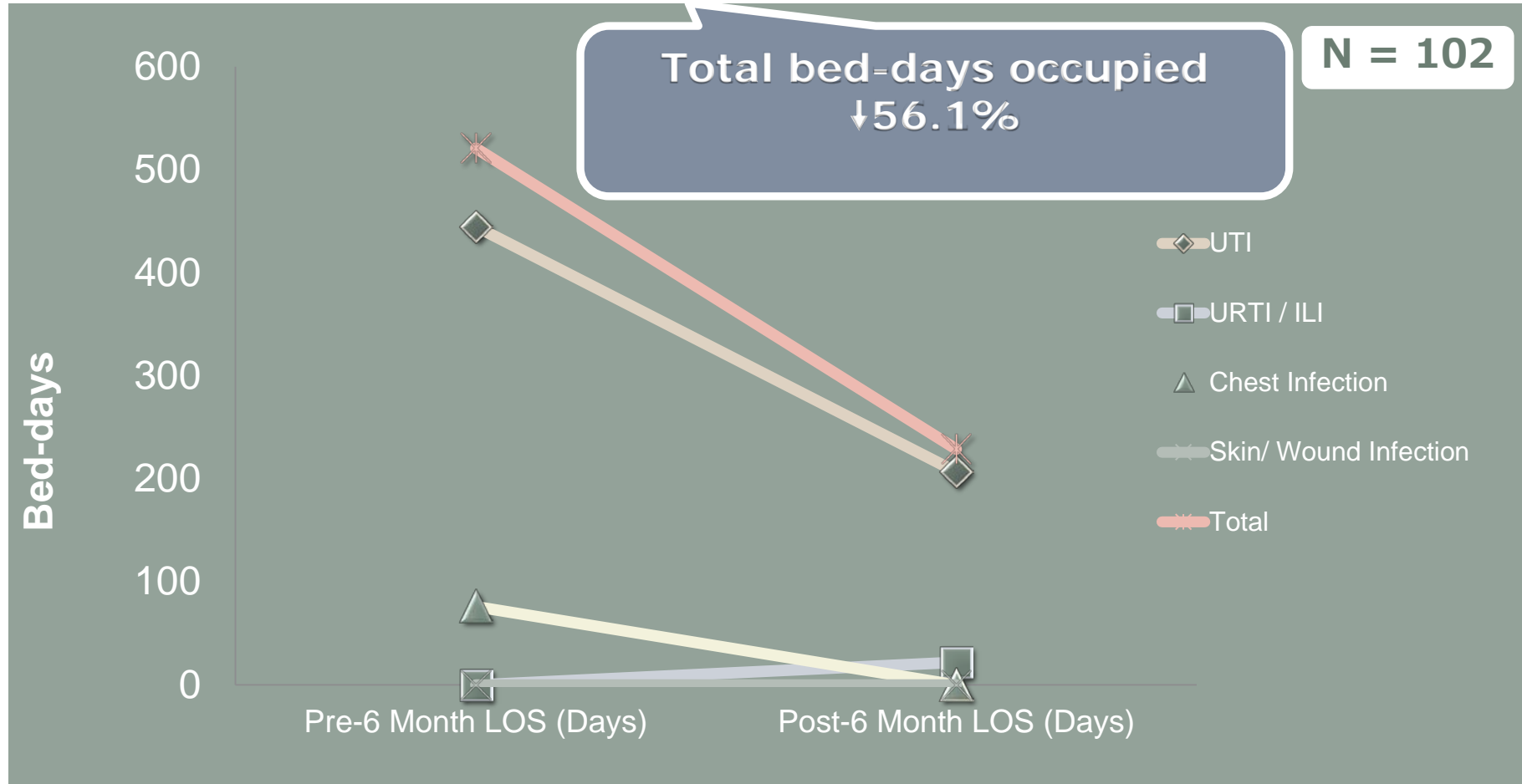
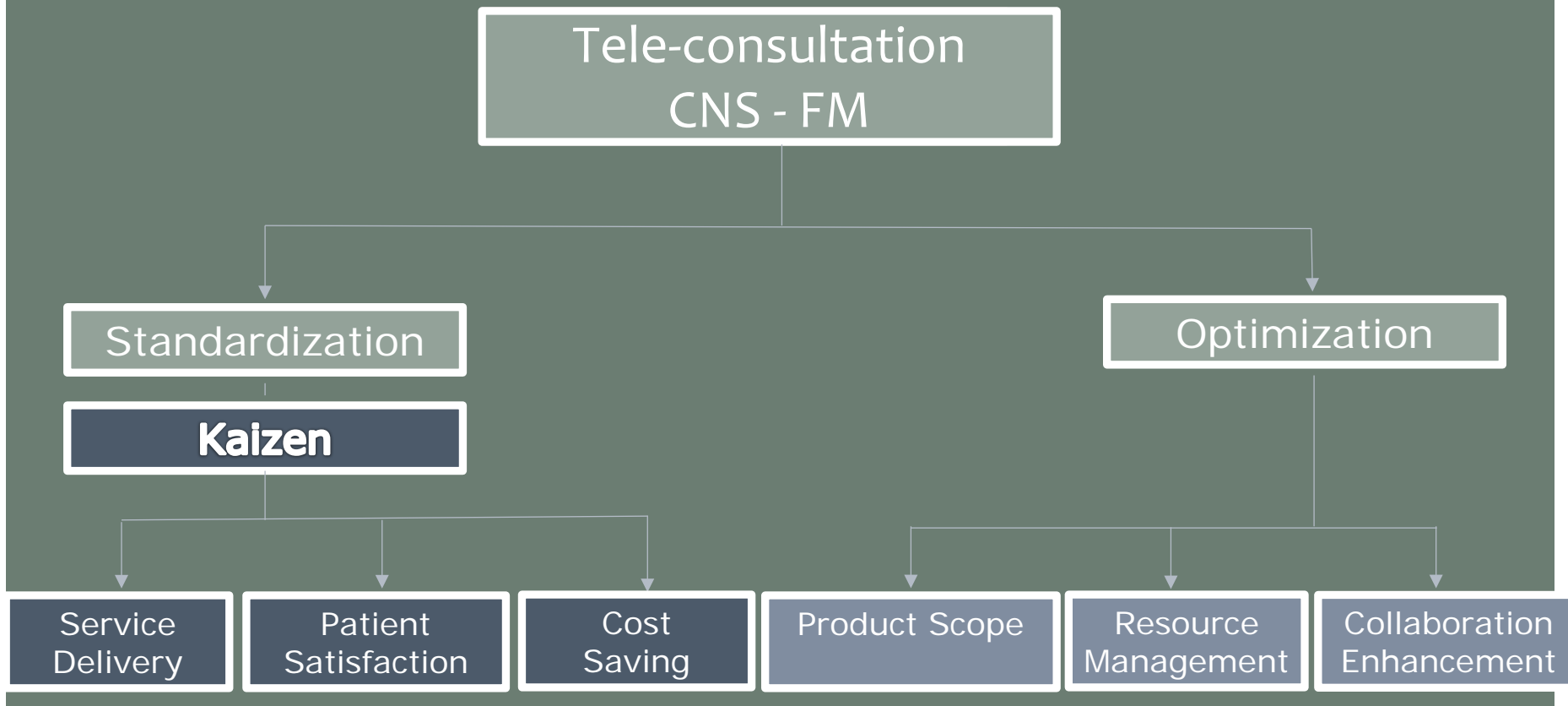# Improve

- Kaizen workflow redesign

Control

Poka-yoke

1. Identify where errors occur

- Capacity for growth
- Service quality

2. Prioritize the problems

Frequency vs. Impact

3. Seek out the root cause

- Review regularly
- Correct at the source

4. Create Solutions

- Think outside of the box

Conclusions on Major Deliverables

Project deliverables

- Project plan
- Shared protocols
- Process flow
- Control process
- Trail run report

Product deliverables

- 97% better than "Satisfaction"
- Zero incidents/complaints
- Saved HK$812 880
  (pre-/post-6 month comparison)
- Trusting relationship

Grateful Acknowledgement

Stakeholders		
Senior Management	Dr. Michelle WONG HKEC DSD(P&CHC)/COS(FM&PHC)	Mr. Lawrence POON HKEC CGM(N)
Managers	Ms. Vivienne LEE HKEC DOM(CSSD&CNS)	Mr. Jimmy WONG HKEC Primary Care Manager
Doctors	ACs (FM)	
Program Nurses	APNs (CNS)	
Nurses	CNS / GOPC	
Users	Patients and Caregivers	

References

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7. Sheila S. & Shahbaz S. (2012). *The McGraw-Hill 36-Hour Course: Lean Six Sigma.* New York: Mc Graw-Hill.

Thank You