

11th NATIONAL QA CONVENTION 2022 | 4-6TH OCTOBER 2022

OP-17



**REDUCING THE PERCENTAGE OF METERED
DOSE INHALER (MDI) SALBUTAMOL EXCHANGE
AMONG PATIENTS WITH ASTHMA IN HEALTH
CLINICS UNDER PEJABAT KESIHATAN DAERAH
PORT DICKSON (PKD PD)**

KAVEENA GUNASEKARAN

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KLINIK KESIHATAN BAGAN PINANG, PORT DICKSON

THE
TEAM

ADVISORS

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TEAM MEMBERS

SURAYA MOHAMED ESA
MUHAMMAD FUAD BIN ARIS
KAVEENA GUNASEKARAN
JAYASIR ELANGKO
AW JIA EN

PRESENTATION HIGHLIGHTS

Selection of Opportunities For Improvement

Problem Identification
 Problem Prioritization & Reasons For Selection(SMART)
 Problem Statement
 Problem Analysis
 Study Objectives

Key Measures For Improvement

Process Of Care
 Model of Good Care
 Indicators and Standard

Process of Gathering Information

Methodology & Data Collection

Analysis & Interpretation

Strategies For Change

Effect Of Change

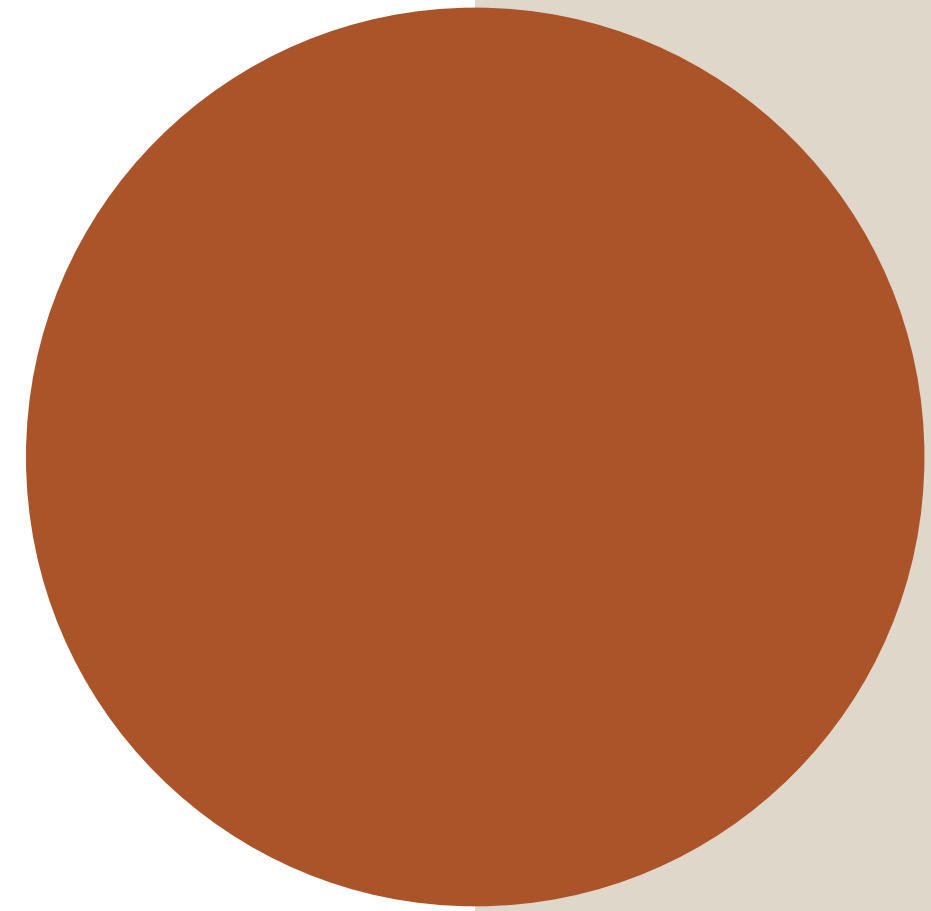
Limitations

Lessons Learnt

The Next Step



SELECTION OF OPPORTUNITIES FOR IMPROVEMENT



PROBLEM IDENTIFICATION

02 • **Increase near-missed medication error** due to different list of medication between prescription and patient's record

04 • **Low achievement of waiting time** at Outpatient Pharmacy

06 • **Low number of DMTAC** patients recruited during clinic days.



01 • **High frequency of exchange of MDI Salbutamol** among Asthma patients in PKD Port Dickson

03 • **Increase number of complaints regarding insufficient stock** supplied from Klinik 1 Malaysia staff.

05 • **Increase number of Illegible handwriting prescriptions**

PROBLEM IDENTIFICATION

Problems	Seriousness	Measurable	Appropriate	Remedial	Timeliness	Total
High percentage of MDI Salbutamol exchange among Asthma patients in PKD Port Dickson	19	19	20	20	20	98
Increase near miss medication error due to different list of medication between prescription and patient's record.	17	15	13	16	13	74
Low number of DMTAC patients recruited during clinic	11	10	11	11	9	52
Increase number of complaint regarding insufficient stock supply from Klinik 1 Malaysia staff.	14	13	14	12	13	66
Low achievement of waiting time at OPD pharmacy.	12	13	11	12	10	58
Increase number of Illegible handwriting prescriptions	11	12	12	11	9	55

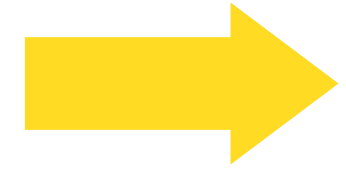
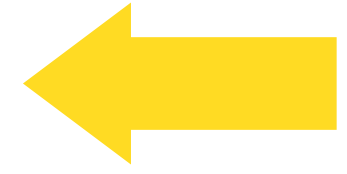
Team Members : 7
Score : 1 (low) - 3(high)

REFINED TOPIC

High percentage of MDI Salbutamol exchange among Asthma patients in PKD Port Dickson

Reducing Percentage of Metered Dose Inhaler (MDI) Salbutamol Exchange Among Patients With Asthma in Health Clinics Pejabat Kesihatan Daerah Port Dickson (PKD PD)

REASON FOR SELECTIONS (SMART)



WORLDWIDE
Affects 262 million people

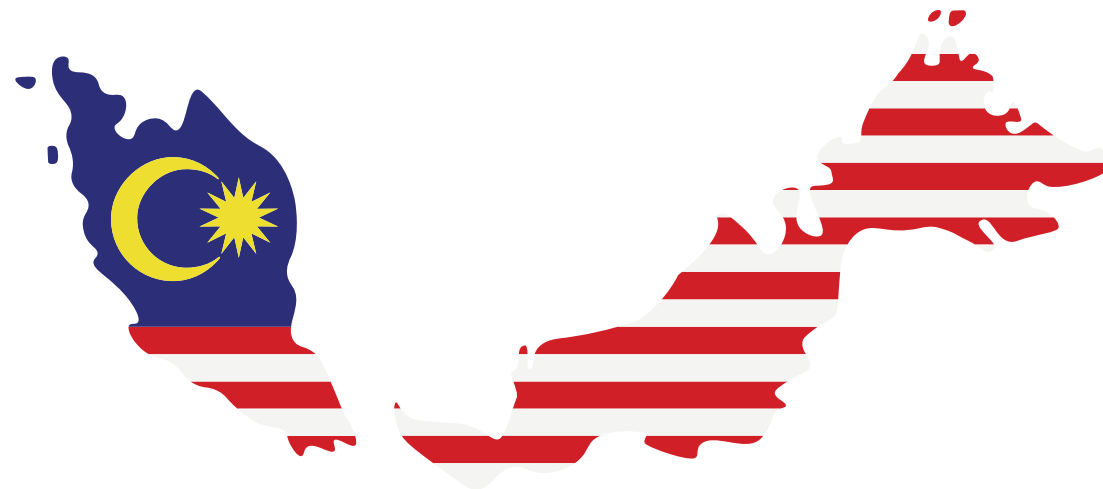
455 000 deaths

MALAYSIA
Affects 2 million people

**1013 deaths
(0.6%)**

Asthma [Internet]. World Health Organization. World Health Organization; [cited 2021Sep27]. Available from: <https://www.who.int/news-room/fact-sheets/detail/asthma>
Asthma in Malaysia [Internet]. World Life Expectancy. 2022 [cited 8 September 2021]. Available from: <https://www.worldlifeexpectancy.com/malaysia-asthma#:~:text=According%20to%20the%20latest%20WHO,Malaysia%20%2398%20in%20the%20world.>

REASON FOR SELECTIONS (**S**SMART)



ASTHMA

50th leading cause of

DEATH

ranking at position No 32

REASON FOR SELECTIONS (SMART)



455000 DEATHS

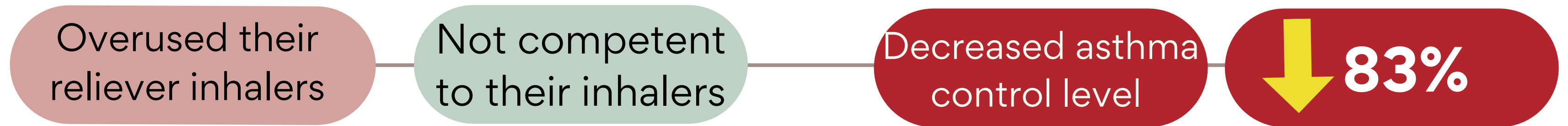


OVERUSED THEIR RELIEVER INHALERS



DID NOT ADHERE TO PREVENTER INHALERS

REASON FOR SELECTIONS (SMART)



REASON FOR SELECTIONS (SMART)

Global Initiative for Asthma (GINA)

using MDI Salbutamol more than 3 canisters per year

strong warning sign of poor asthma control

using MDI Salbutamol more than 12 canisters per year

increased asthma related death

MALAYSIA ASTHMA CPG

using MDI Salbutamol more than 1 canister per month

increase risk of asthma related death

REASON FOR SELECTIONS (SMART)

MEASURABLE

Data of percentage of MDI salbutamol exchange can be extracted from the Pharmacy Information System (PhIS)

APPROPRIATE

By reducing percentage of MDI Salbutamol exchange , we can improve patient's asthma control, reduce risks and complications, mortality and morbidity, optimize desirable treatment outcome, ensure patient's safety and reduce overall healthcare cost.

REMEDIABLE

Implementation of remedial actions can be done with an active involvement of patients, pharmacists and prescribers.

TIMELINESS

The study can be completed within a short period of time.

LITERATURE REVIEW

90%
of patients using metered dose
inhalers **wrongly**.



LITERATURE REVIEW

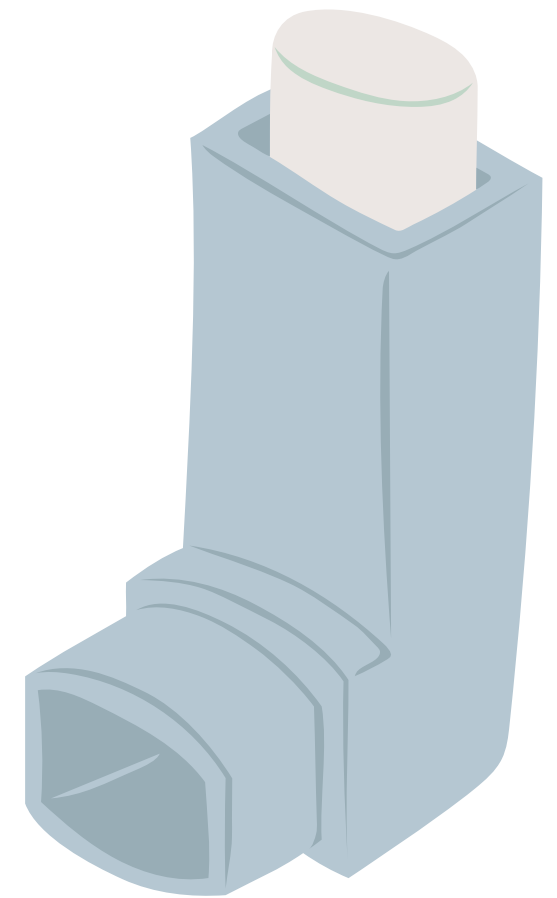
OVERUSING MDI Salbutamol is a **problem.**

It does not inherent anti-inflammatory pharmacological properties

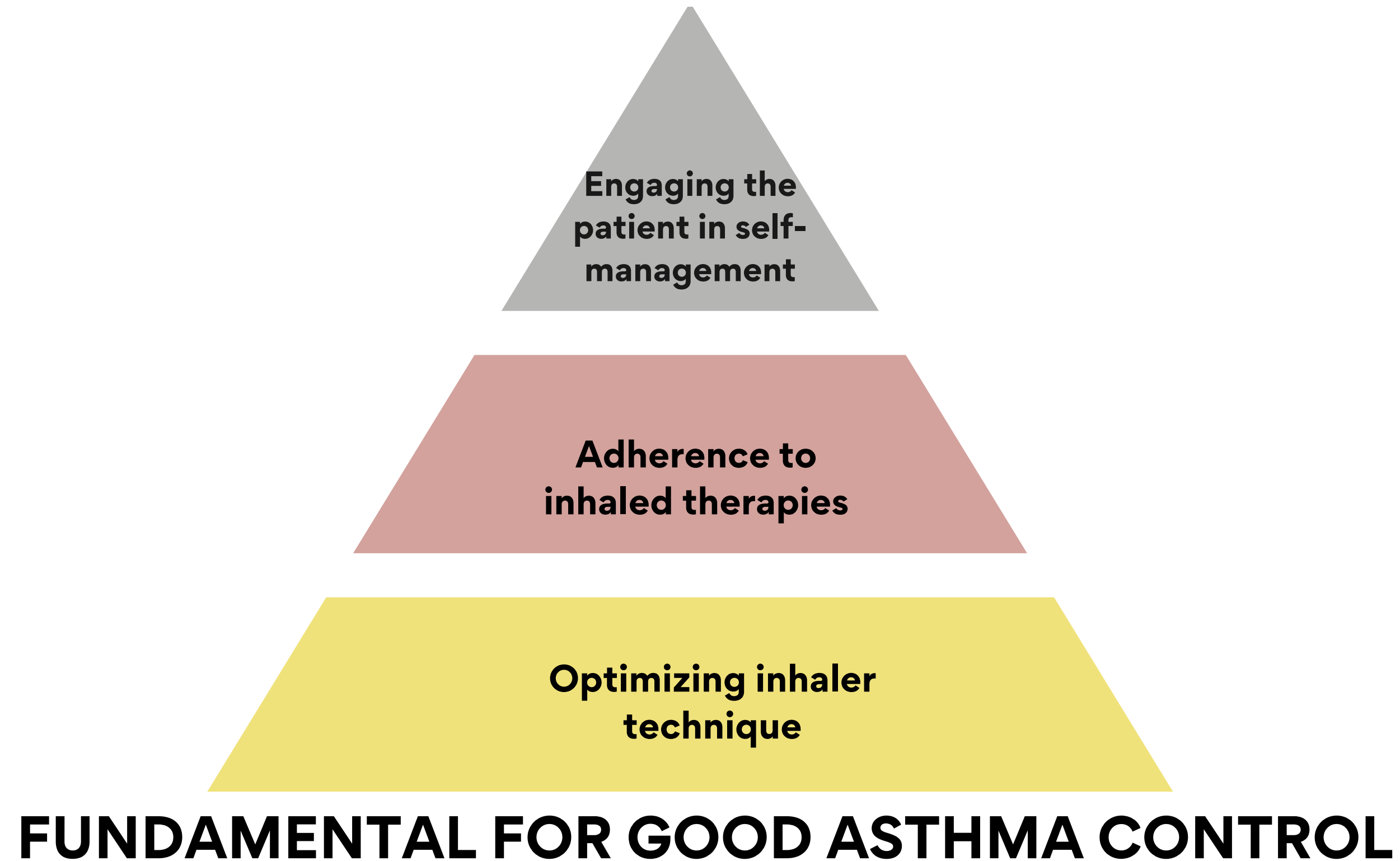
Do not control the underlying airway inflammation that causes asthma

Mask the progression of the disease and increase hyper-responsiveness in the airways

Leading to greater sensitivity to triggers



LITERATURE REVIEW



LITERATURE REVIEW

COST FOR ASTHMA MANAGEMENT



\$6 BILLION/year



RM 85 440 (2018)

MDI Salbutamol purchase

Gamble J, Stevenson M, McClean E, Heaney LG. The prevalence of nonadherence in difficult asthma. *Am J Respir Crit Care Med*. 2009 Nov 1;180(9):817-22. doi: 10.1164/rccm.200902-0166OC. Epub 2009 Jul 30. PMID: 19644048.

Asthma in Malaysia [Internet]. World Life Expectancy. 2022 [cited 8 September 2022]. Available from: <https://www.worldlifeexpectancy.com/malaysia-asthma#:~:text=According%20to%20the%20latest%20WHO,Malaysia%20%2398%20in%20the%20world.>

TERMS & DEFINITION

TERMS	DEFINITION
Inhaler exchange	In order to obtain a new inhaler, patient is required to return the used inhaler to the pharmacy.
PhIS	Pharmacy Information System
Preventer Inhaler	Corticosteroid Inhaler
Defaulter	Patient who did not come for a refill as indicated.
Rate of exchange frequently	Monthly

PROBLEM STATEMENT

In Health Clinics in PKDPD, the percentage of patients frequently exchange MDI Salbutamol was **HIGH**.

Verification survey done in Jan -Jun 2018 showed:

- **Out of 158 samples, 108 patients exchange MDI Salbutamol monthly.**
- **6 in 10 patients with MDI Salbutamol comes for a refill every month- alarming!**

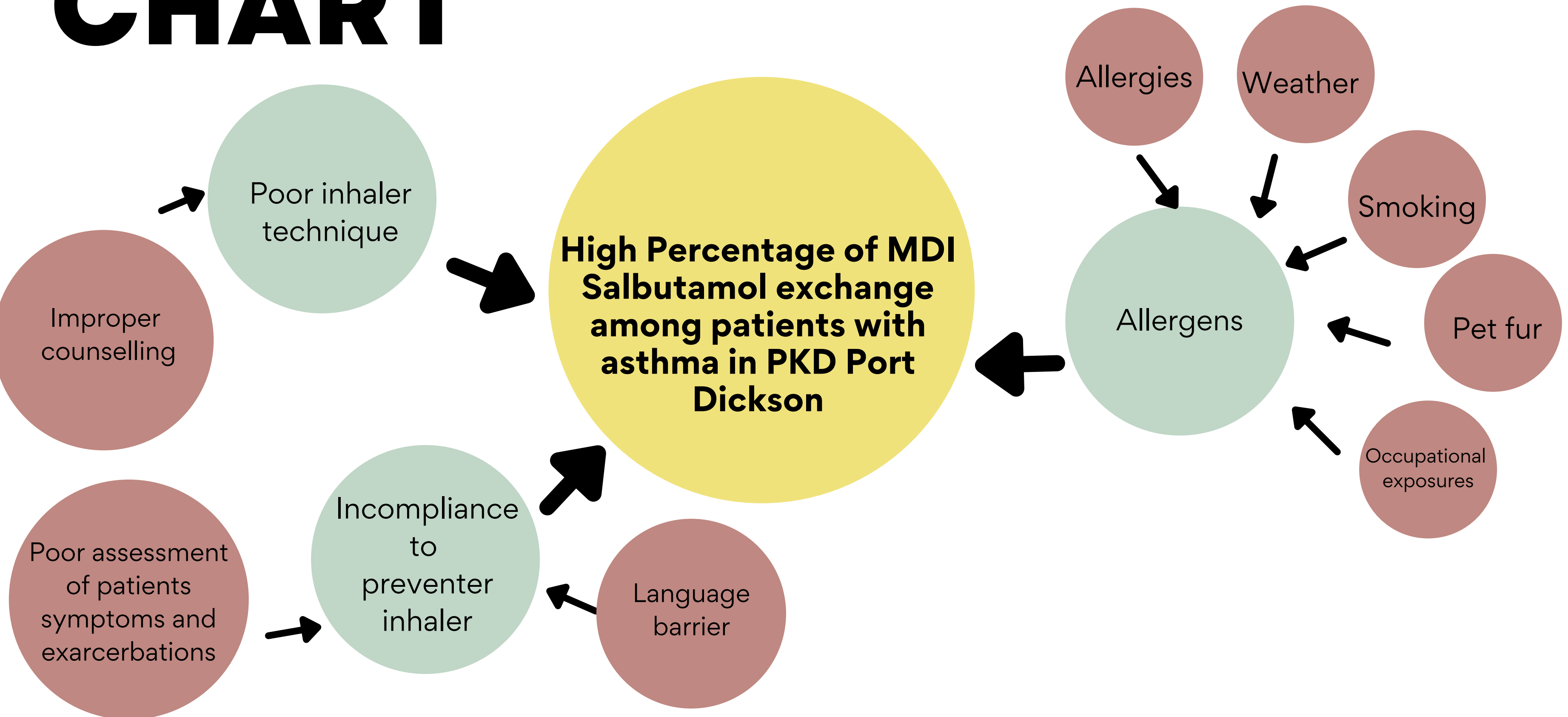


GINA states that over use of **MDI Salbutamol > 3 canisters per year** increases the **risk of hospitalization and admission**. (2 puff when necessary)
The use of **12 inhalers and more increases** the risk of **asthma-related death**.

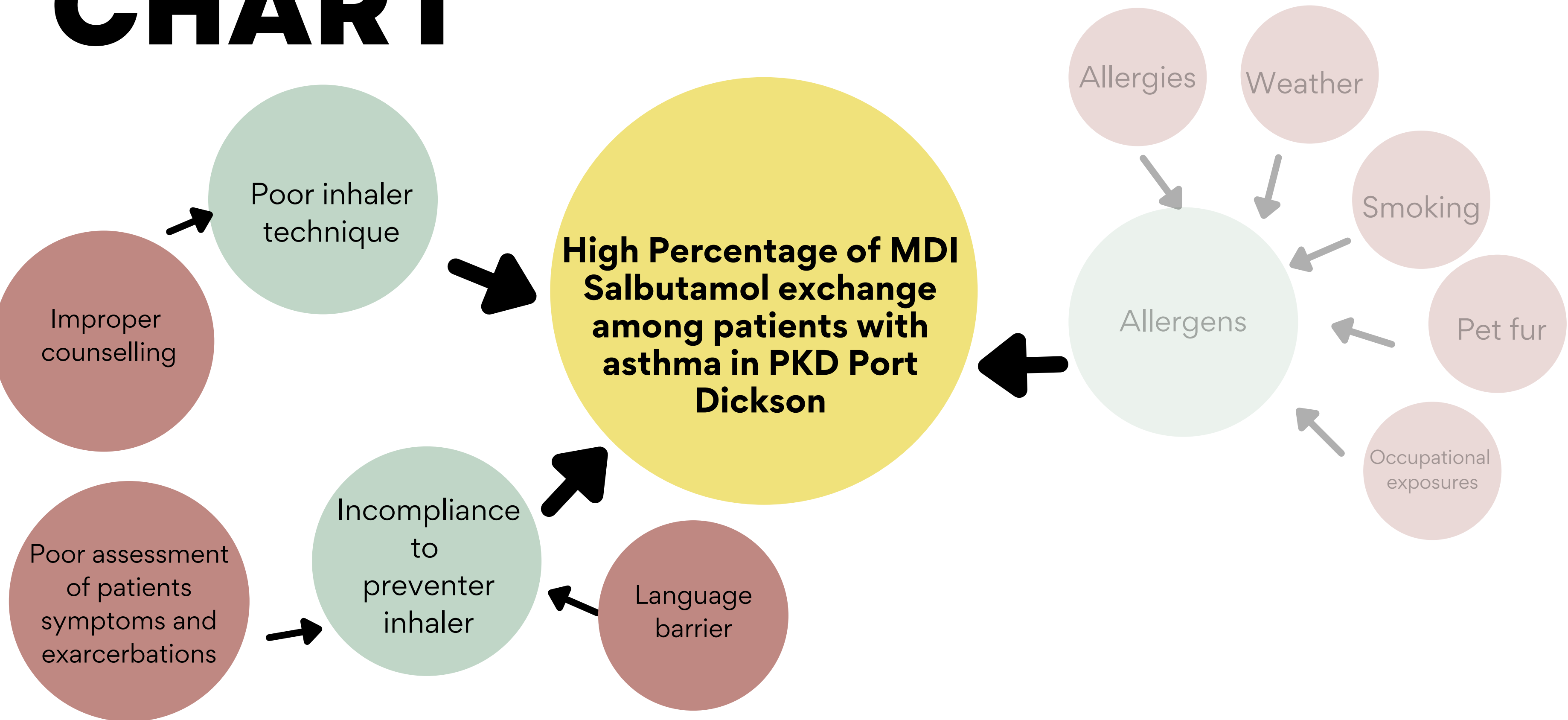
PROBLEM ANALYSIS

WHAT	HIGH percentage of MDI Salbutamol exchange among patients with asthma in health clinics in PKDPD
WHEN	2018 - when patient was prescribed with MDI Salbutamol and a preventer inhaler for their asthma
WHERE	Health Clinics in PKDPD
WHY	Poor technique, poor compliance to preventer inhaler, allergens
WHO	Patients, Pharmacists, Prescribers
HOW	One reliever inhaler should last 3-4 months when used as necessary, but patient came in for an exchange monthly - overusing their reliever inhaler!

PROBLEM ANALYSIS CHART



PROBLEM ANALYSIS CHART



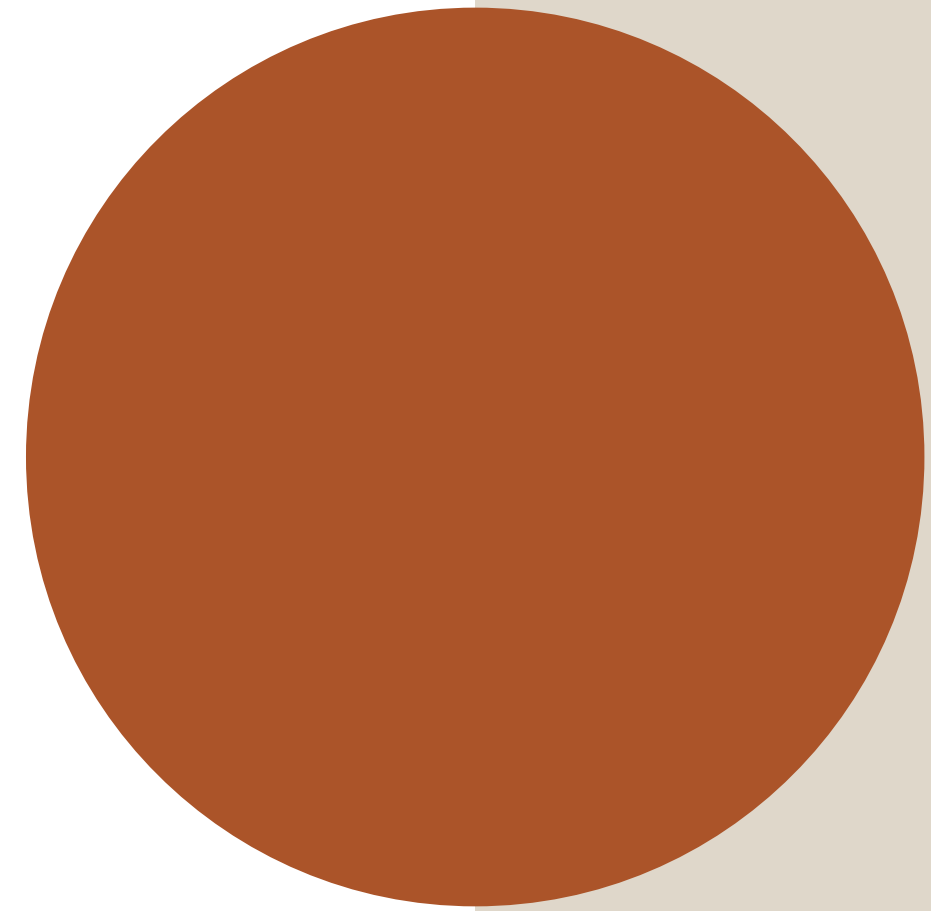
GENERAL OBJECTIVE

To **Reduce** Percentage of MDI Salbutamol
Exchange Among Patients With Asthma in Health Clinics
Pejabat Kesihatan Daerah Port Dickson

SPECIFIC OBJECTIVES

- 1.To determine the high percentage of MDI Salbutamol exchange among patients with asthma in PKD Port Dickson
- 2.To identify the probable causes contributing to the high percentage of MDI Salbutamol exchange among patients with asthma in PKD Port Dickson.
- 3.To formulate remedial measure and implement them.
- 4.To evaluate the effectiveness of the remedial measures.

KEY MEASURES FOR IMPROVEMENT



PROCESS OF CARE

Counselling Patient with MDI in Health Clinics in PKDPD

Receive prescription/Identify patient

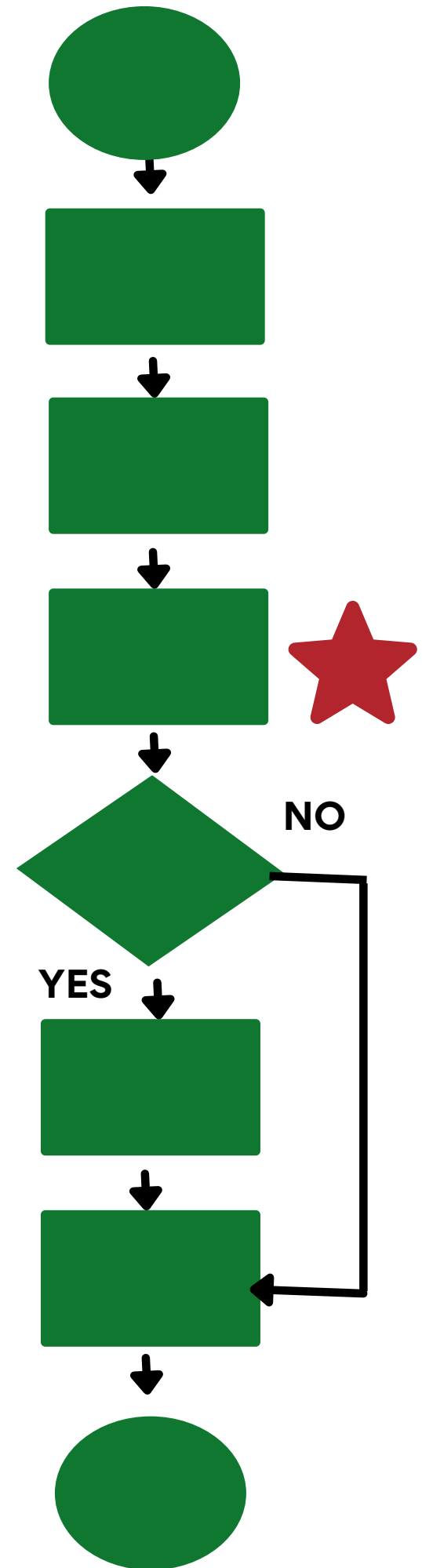
Introduce yourself and purpose of counselling.

Conduct counselling session and assess understanding

Requires follow up?

Reschedule next appointment and record in Follow Up Counselling Registry

Complete all documentation



PROCESS OF CARE

Counselling Patient with MDI in Health Clinics in PKDPD



The Current Standard Counselling Checklist doesn't focus on patient's technique improvement, symptoms of exacerbation and compliance.

Receive prescription/Identify patient

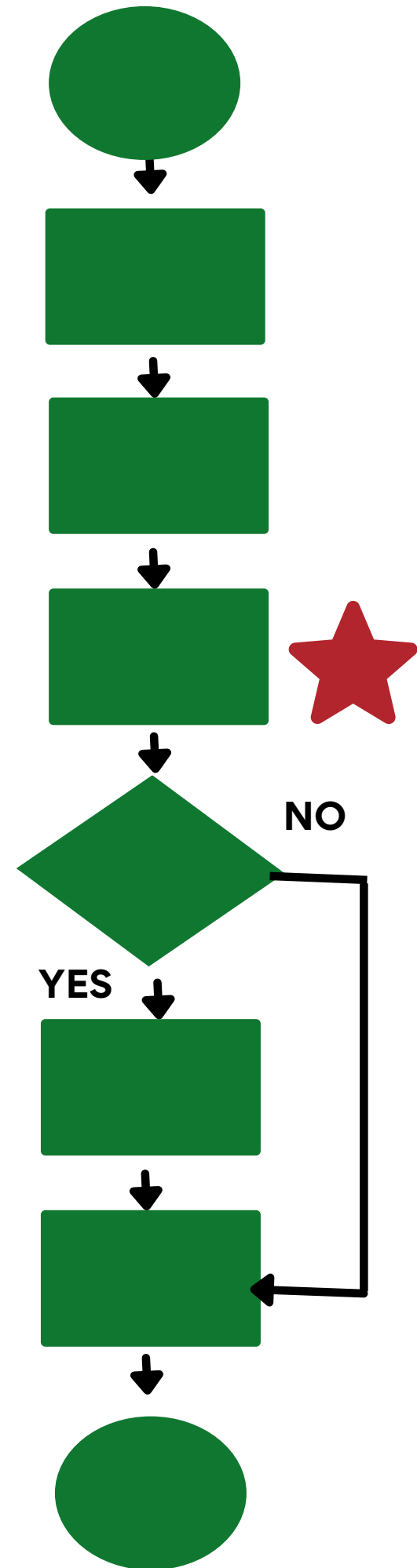
Introduce yourself and purpose of counselling.

Conduct counselling session and assess understanding

Requires follow up?

Reschedule next appointment and record in Follow Up Counselling Registry

Complete all documentation



MODEL OF GOOD CARE (MOGGC)

Process

Criteria

Standard

Receive prescription/Identify patient

Make sure these detail are correct

- Right Patient
- right medication
- right dose
- right timing
- right route of administration

100%

Conduct counselling session and assess understanding.

Using standard counselling checklist,

- assess technique
- assess compliance
- assess symptoms with ACT score

100%

Requires follow up, reschedule for next appointment

Reschedule for follow up based on their performance.

100%

Complete all documentation

Recording in PhIS

100%

INDICATOR & STANDARD

Indicator:

Percentage of patient that exchange MDI Salbutamol frequently in PKD Port Dickson.

Formula:

Number of patients *who* exchange MDI Salbutamol frequently

Total Number of patients on MDI Salbutamol in PKD Port Dickson

x100%

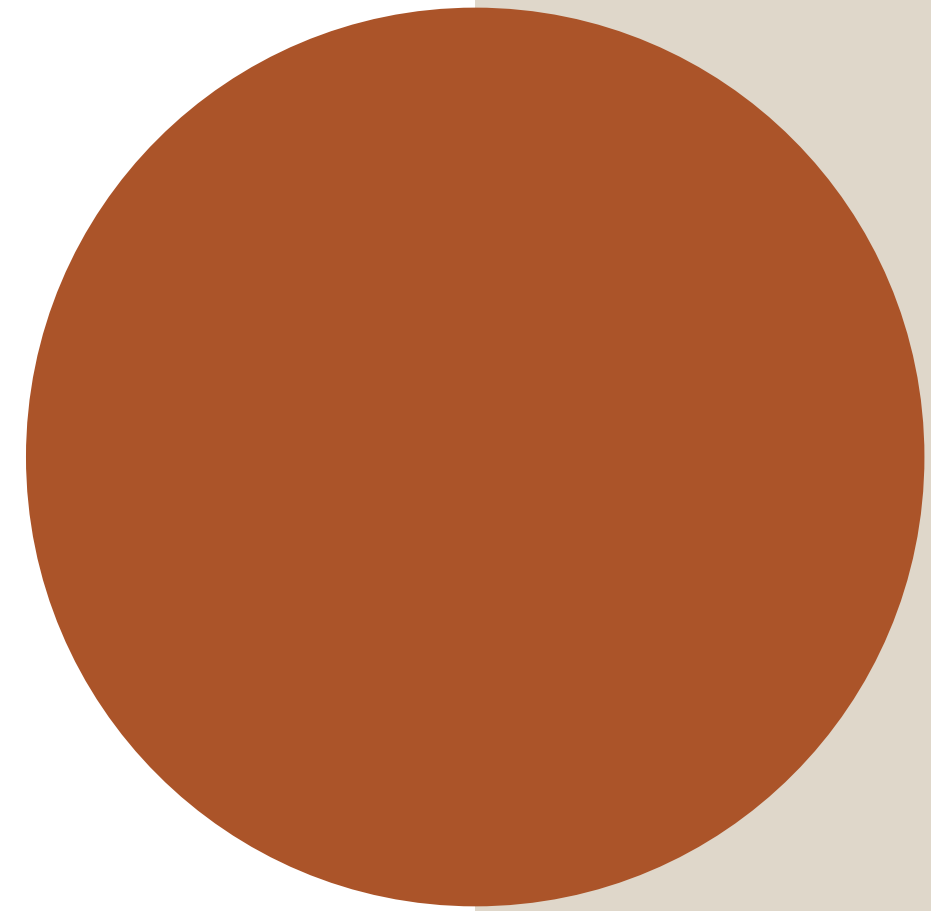
**Frequently : Monthly

Standard :

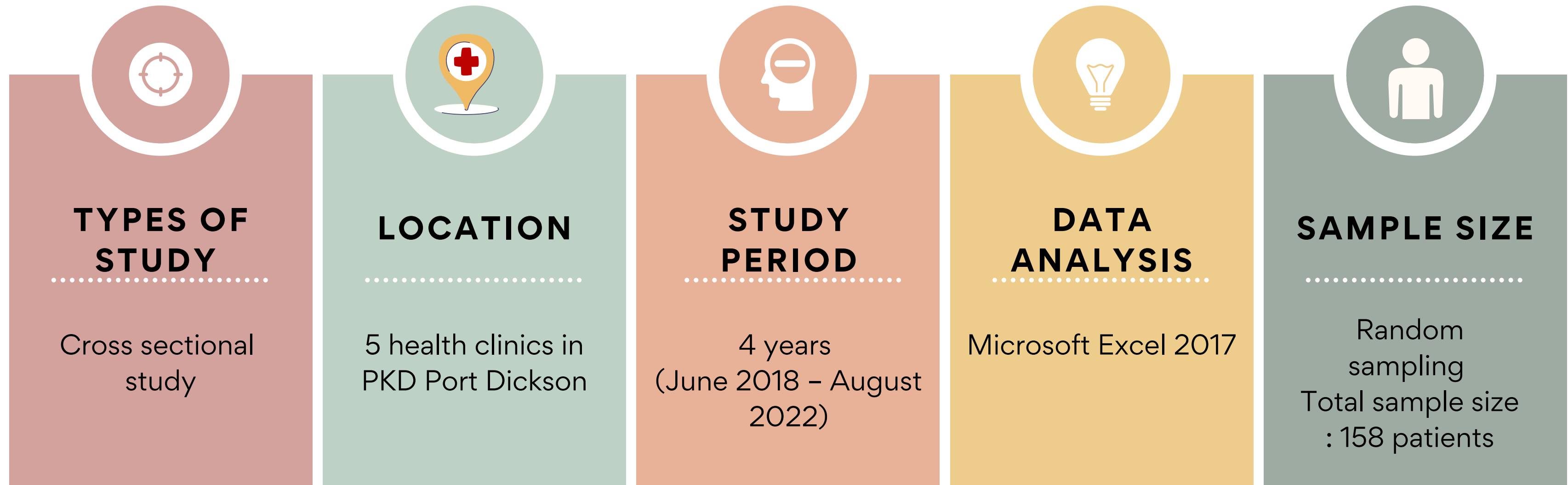
35%

based on consensus in the Asthma Committee Meeting 2018 (PKDPPD).

PROCESS OF GATHERING INFORMATION



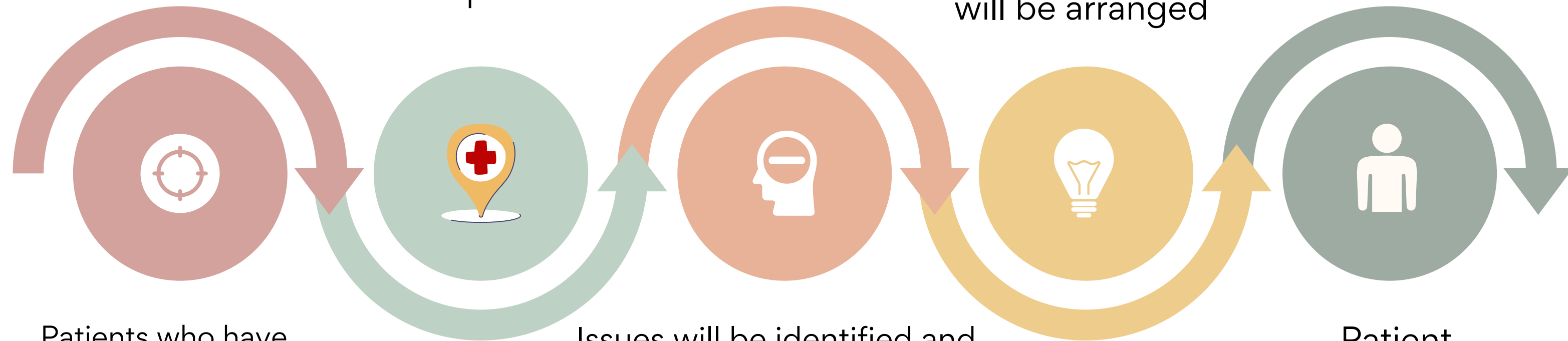
METHODOLOGY



METHODOLOGY

Interviewed using
QA Assessment
Form & QA Inhaler
Technique Form.

Regular follow-up
will be arranged

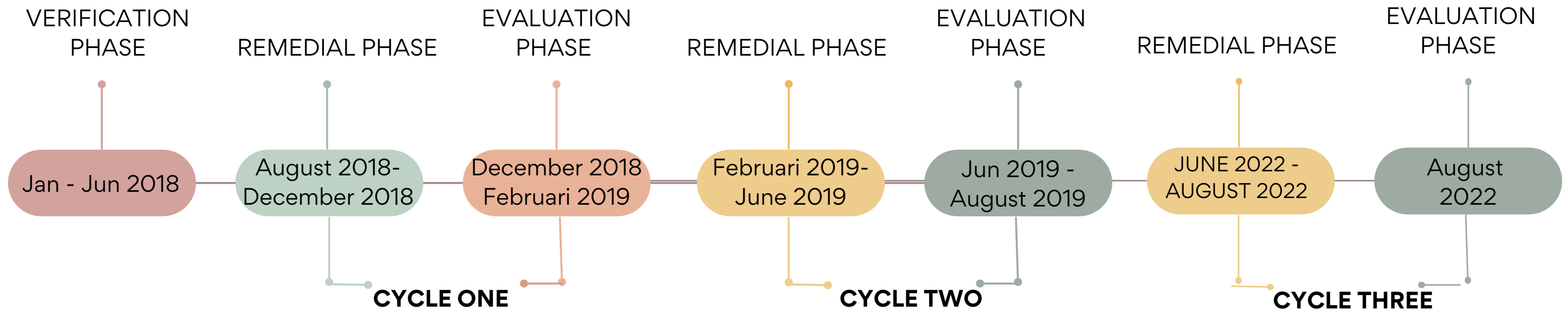


Patients who have met the inclusion criteria will be invited to participate in the study.

Issues will be identified and intervention done immediately. Prescribers were updated on patient's status. QR code of a multi-language counselling video will be attached to patient's prescription or Asthma book.

Patient reassessed on the next visit.

METHODOLOGY



INCLUSION & EXCLUSION CRITERIA

INCLUSION

- All asthmatic patients with MDI Salbutamol & Preventer attending health clinics in PKD Port Dickson
- All asthmatic patients who frequently exchange MDI Salbutamol monthly.

EXCLUSION

- Patients who do not consent to involve in this study
- Defaulted patients
- SPUB patients
- Walk-in patients
- Children below 18 years old
- COPD patients and other patients with chronic lung diseases.

SAMPLE SIZE

Clinics	Sample Size
KK Port Dickson	100
KK Lukut	12
KK Pasir Panjang	17
KK Bukit Pelanduk	8
KK Linggi	21
TOTAL	158

DATA COLLECTION TOOL

VARIABLE (WHAT)	SOURCE OF DATA (WHERE)	DATA COLLECTOR (WHO)	DATA COLLECTION TIME (WHEN)	METHOD OF COLLECTION (HOW)
Percentage of patients frequently exchange MDI Salbutamol	PhIS	Pharmacist	Working hours (8.00am-5.00pm)	Online Record
Percentage of patients with good inhaler technique	QA Inhaler Technique Checklist Form	Pharmacist	Working hours (8.00am-5.00pm)	Questionnaire
Percentage of patients with good compliance to preventer	QA Assessment Form	Pharmacist	Working hours (8.00am-5.00pm)	Questionnaire
Percentage of patients with optimum ACT Scores (>25)	QA Assessment Form	Pharmacist	Working hours (8.00am-5.00pm)	Questionnaire
Purchasing cost of MDI Salbutamol	PhIS	Pharmacist	Working hours (8.00am-5.00pm)	Online Record

DATA COLLECTION TOOL

FORM 1 :QA Inhaler Technique Checklist

Adopt & Adapt from Respiratory MTAC

Provide scoring for each steps during counselling session.

Inhaler Technique Checklist (Indicate YES (1) or NO (0) if step was performed in proper sequence)								
Visit	MDI	Score	Turbuhaler	Score	Accuhaler	Score	MDI & Spacer	Score
1	1. Shake inhaler and removes cap.		1. Unscrew and lifts off the cover.		1. Place outer case in one hand and thumb of the other hand on the thumb grip. Pushes thumb back until a "CLICK" sound is heard.		1. Shakes inhaler and removes cap.	
2								
3								
4								
5								
1	2. Breathe out completely and comfortably.		2. Hold inhaler upright Turn the grip as far as it will go in 1 direction and turns it back again until a "CLICK" sound is heard.		2. Hold horizontally. Slides the lever away as far as it will go until another "CLICK" sound is heard.		2. Connect inhaler and spacer.	
2								
3								
4								
5								
1	3. Place mouthpiece into mouth and press canister ONCE.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely and comfortably.	
2								
3								
4								
5								
1	4. Inhale slowly and deeply through inhaler.		4. Place the mouthpiece between teeth and seal lips to mouthpiece. Breathe in forcefully and deeply through the mouth.		4. Seal lips to mouthpiece and inhales steadily and deeply.		4. Insert spacer into mouth OR apply mask to face and press canister ONCE.	
2								
3								
4								
5								
1	5. Hold the breath for 4-10 seconds.		5. Removes inhaler from the mouth before breathing out again.		5. Removes the Accuhaler from mouth and holds breath for about 10 seconds, then breathe out slowly.		5. Inhale slowly and deeply and holds breath for 4-10 seconds OR take 5-10 normal breaths while lips remain on spacer.	
2								
3								
4								
5								
1	6. Wait 30seconds before next puff.		6. Repeat step 2 to 5 if more than one dose is required. Replace the cover.		6. Slide thumb grip back to its original position until a "CLICK" sound is heard and unit closes.		6. Wait 30 seconds before next puff.	
2								
3								
4								
5								
1	TOTAL		TOTAL		TOTAL		TOTAL	
2								
3								
4								
5								

* Technique score rating : (6) Good ; (4-5) Satisfactory ; (0-3) Poor

DATA COLLECTION TOOL

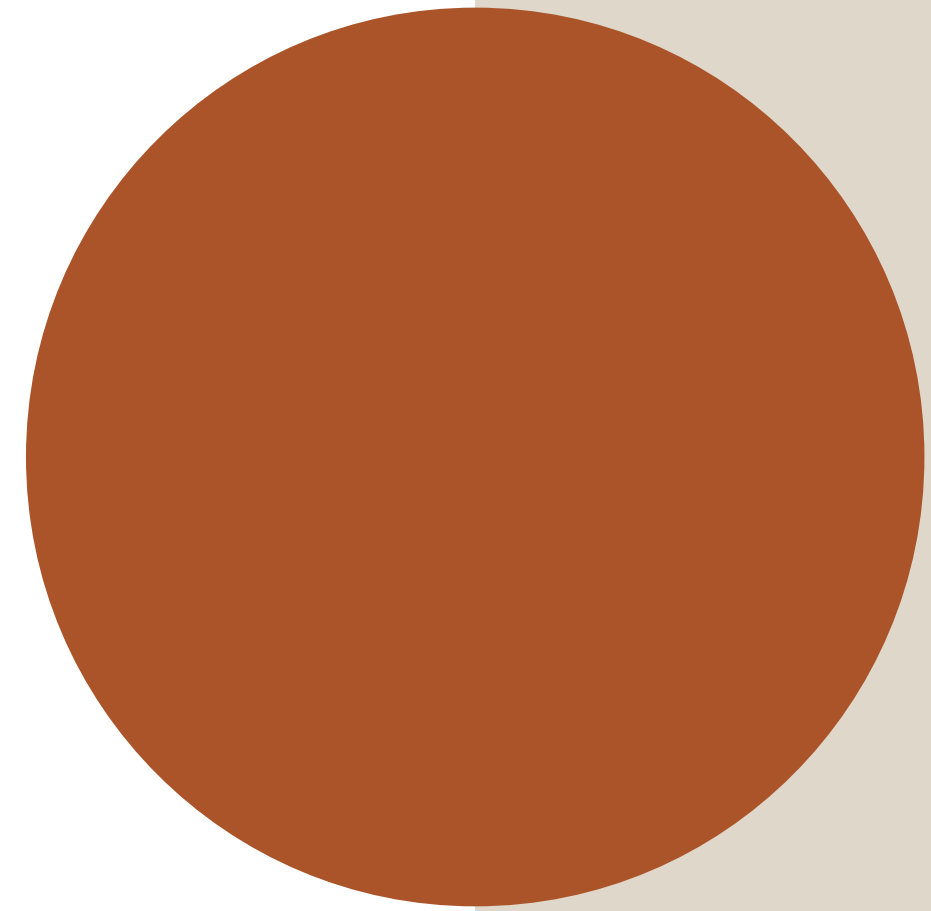
FORM 2: QA Assessment form

Adopt & Adapt from Respiratory MTAC

Looks into Asthma Control Test (ACT) score and compliance issue.

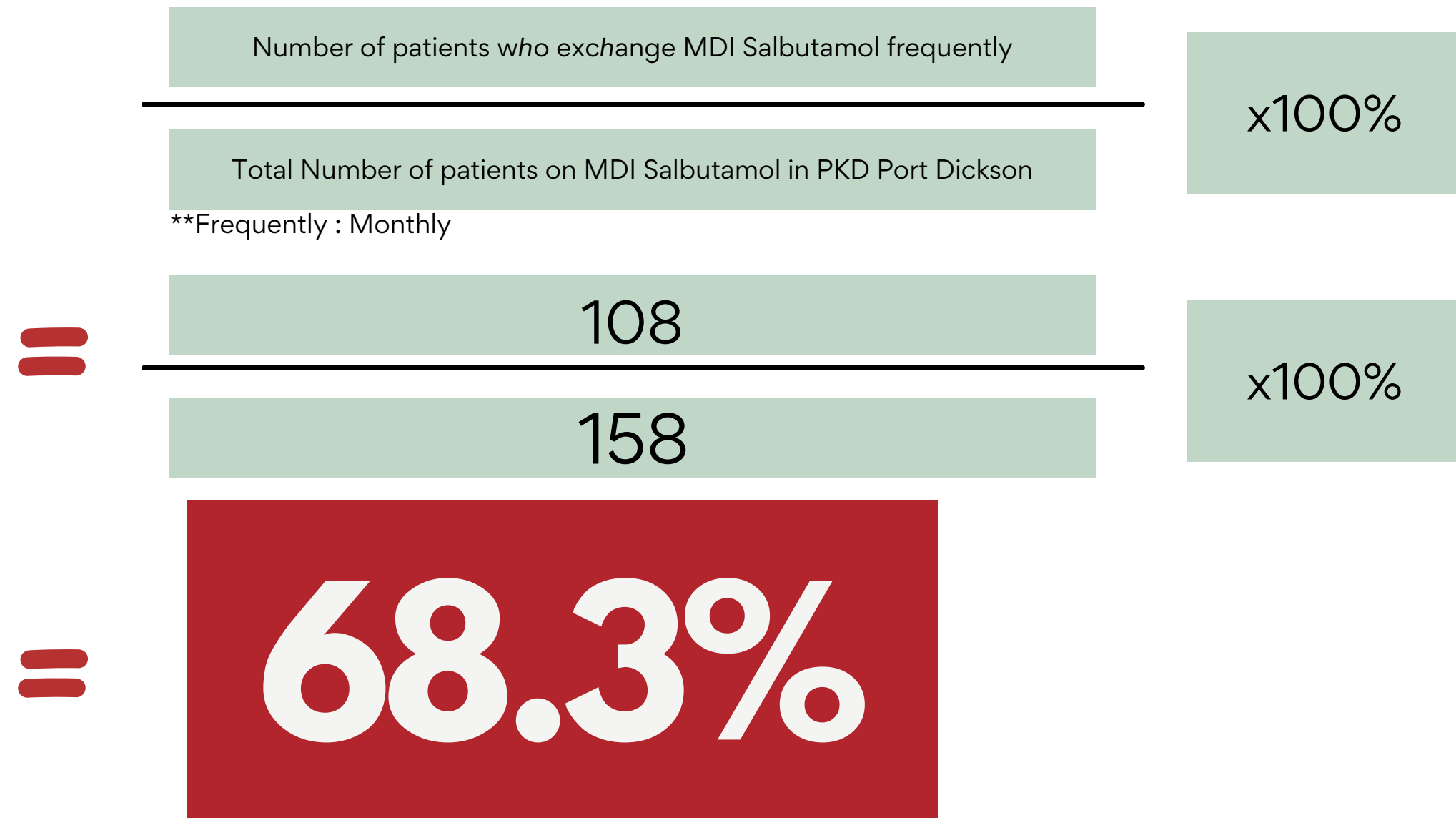
QA Asthma Assessment Form										Reference Num:						
Patient Demographics																
Name:						Gender:	Male / Female									
I/C Number:						Contact Num:										
Age:						Ethnic:	Malay / Chinese / Indian / Others :									
Education level:	Primary / Secondary / Tertiary					Occupation:										
Smoking status:	Ea. smoker:					Diagnosis:	Allergic Rhinitis: Yes / No									
	Yes: _____ stick / day															
No: _____					Year of Diagnosis:											
Last ED Visit: ____/____/____		ED visit past 1 year		_____ times												
Current Medications																
No	Inhalers	Start	Stop	No	Other asthma related medications (for past 3 months)		Start	Stop								
1				6												
2				7												
3				8												
4				9												
5				10												
PEFR Readings (l/min)																
Visit		1			2			3			Expected (h)	Personal Best (a / b) x 100%				
Date		Best (a)			Best (a)			Best (a)								
1st																
2/12																
3/12																
4/12																
Asthma Control Test (ACT)																
Visit		1st			2/12			3/12			4/12					
Date		5/12			6/12			7/12			8/12					
1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?																
All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5							
2. During the past 4 weeks, how often have you had shortness of breath?																
More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5							
3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath,																
4 or more times a week	1	2 to 3 nights a week	2	Once a week	3	Once or twice a week	4	Not at all	5							
4. During the past 4 weeks, how often you used your rescue inhaler or reliever medication (such as																
3 or more times a day	1	1 to 2 times a day	2	2 to 3 times a day	3	Once a week or less	4	Not at all	5							
5. How would you rate your asthma control during the past 4 weeks?																
Not controlled	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5							
* ACT score indicator: (25) Congratulations! ; (20-24) On Target ; (<20) Off Target										Total						
Compliance																
Visit	Do you use or preventor inhaler?										Yes		No			
	How often do you use preventor inhaler?															
1st visit	A. Everyday					B. When necessary, during acute asthma attack										
	Yes				No	Yes				No	Yes			No		
2/12	Yes				No	Yes			No	Yes			No			
3/12	Yes				No	Yes			No	Yes			No			
4/12	Yes				No	Yes			No	Yes			No			
5/12	Yes				No	Yes			No	Yes			No			
Visit	Advice on Asthma Action Plan?					Defaulting Tracing (Call answered?)										
	Yes				No	Yes				No	Yes			No		
1st visit	Yes				No	Yes			No	Yes			No			
2/12	Yes				No	Yes			No	Yes			No			
3/12	Yes				No	Yes			No	Yes			No			
4/12	Yes				No	Yes			No	Yes			No			
5/12	Yes				No	Yes			No	Yes			No			

ANALYSIS & INTEPRETATION



VERIFICATION STUDY

RESULT OF THE VERIFICATION STUDY

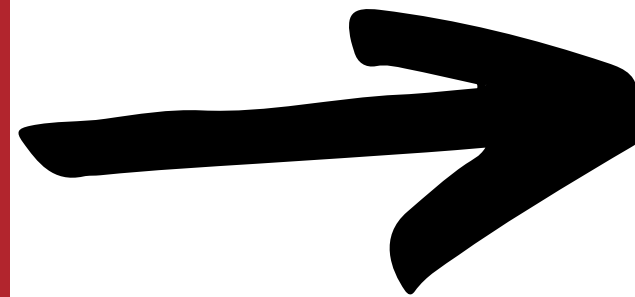


Percentage of patients who exchange MDI Salbutamol frequently

VERIFICATION STUDY

RESULT OF VERIFICATION STUDY

68.3%



GOAL FOR IMPROVEMENT

35%



TO REDUCE THE PERCENTAGE OF MDI
SALBUTAMOL EXCHANGE MONTHLY
FROM 68.3 % TO 35%.

MODEL OF GOOD CARE (MOGC)

Process	Criteria	Standard	Verification
Receive prescription/Identify patient	<p>Make sure these detail are correct</p> <ul style="list-style-type: none"> • Right Patient • right medication • right dose • right timing • right route of administration 	100%	100%
Conduct counselling session and assess understanding.	<p>Using standard counselling checklist,</p> <ul style="list-style-type: none"> • assess technique • assess compliance • assess symptoms with ACT score 	100%	<p>50%</p> <p>0%</p> <p>0%</p>
Requires follow up, reschedule for next appointment	Reschedule for follow up based on their performance.	100%	100%
Complete all documentation	Recording in PhIS	100%	100%

CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY

(Test of Adherence to Inhalers Questionnaire)

Remediable Factors

Poor Inhaler Technique

Incompliance to Preventer Inhaler

CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY

Remediable Factors

Poor Inhaler Technique

Improper counselling

Incompliance to Preventer Inhaler

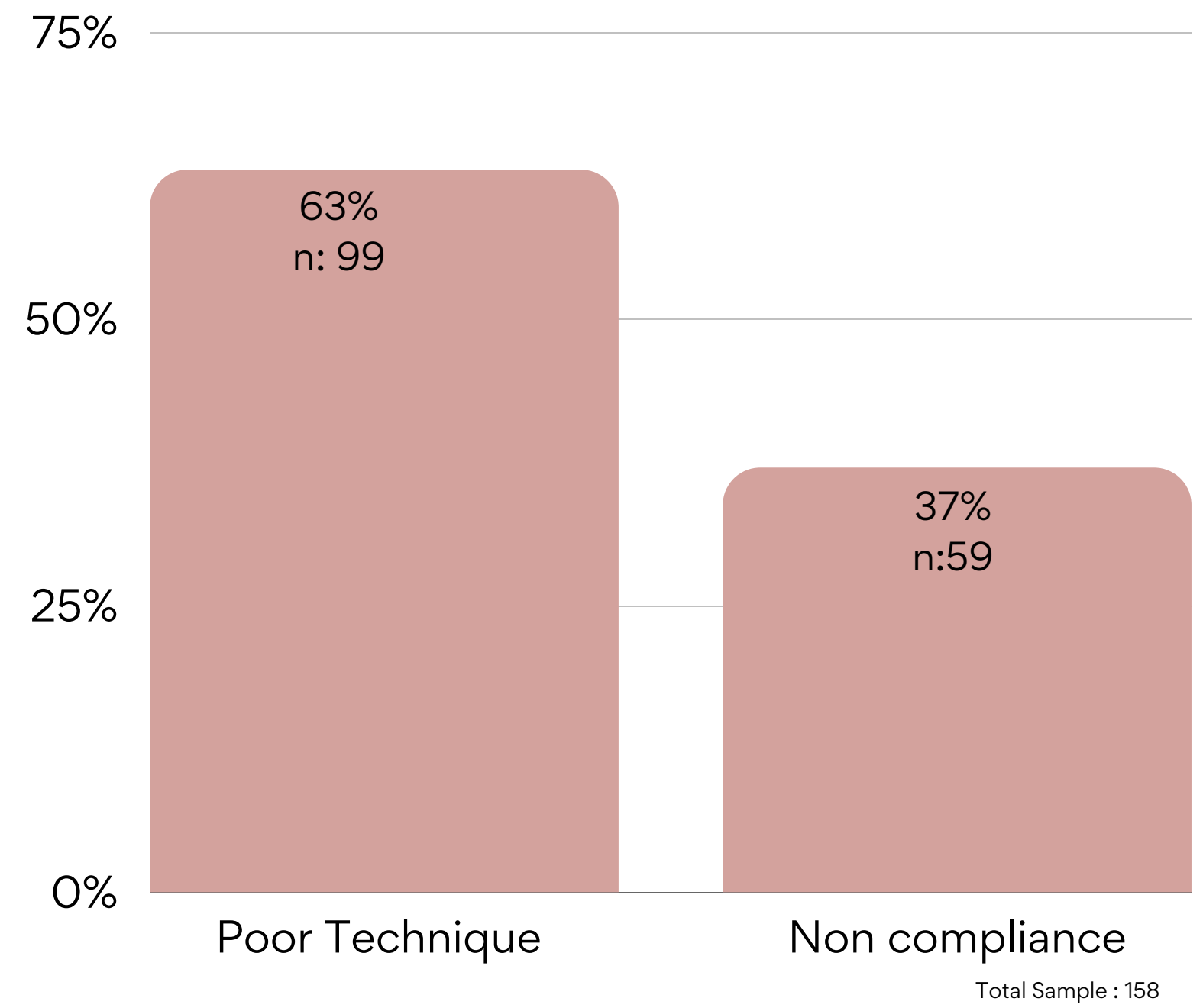
Poor assessment of patients symptoms and exacerbation

Language Barrier

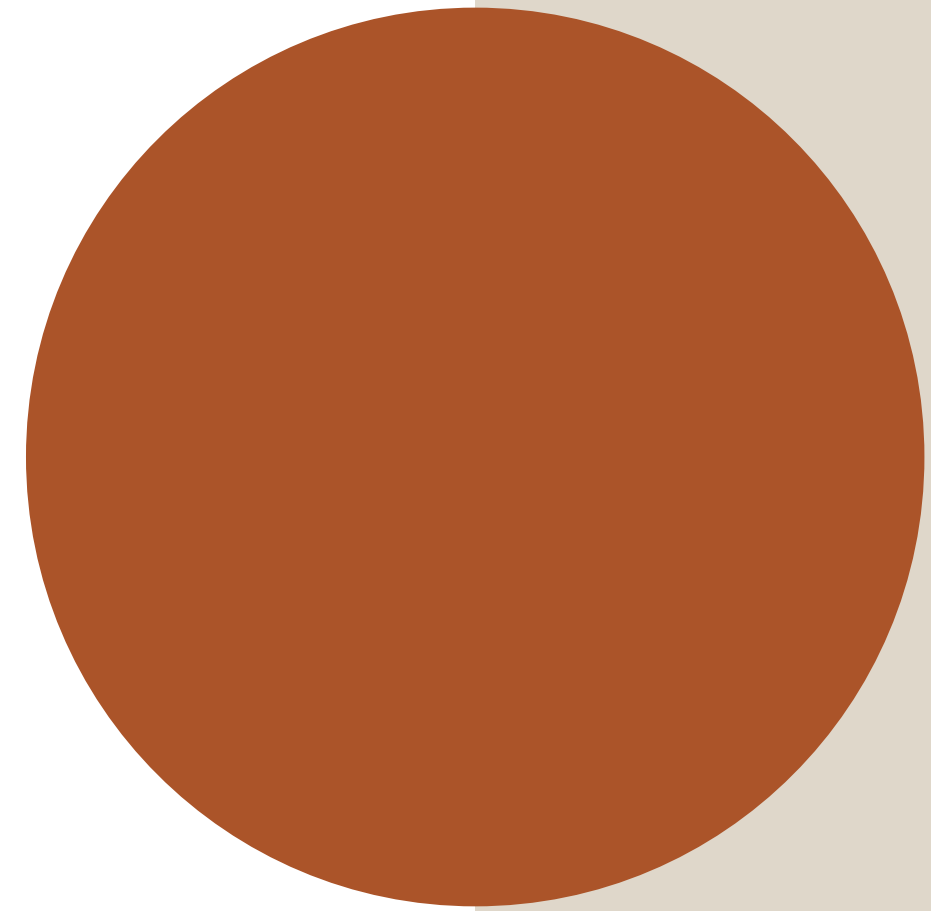
CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY

(Test of Adherence to Inhalers Questionnaire)



STRATEGIES FOR CHANGE



STRATEGIES FOR CHANGE

CYCLE 1

Modified Counselling Technique
Checklist with scoring

adopt and adapt from RMTAC

CYCLE 2

Modified Counselling form - to assess
symptoms using Asthma Control Test
scoring

adopt and adapt from RMTAC

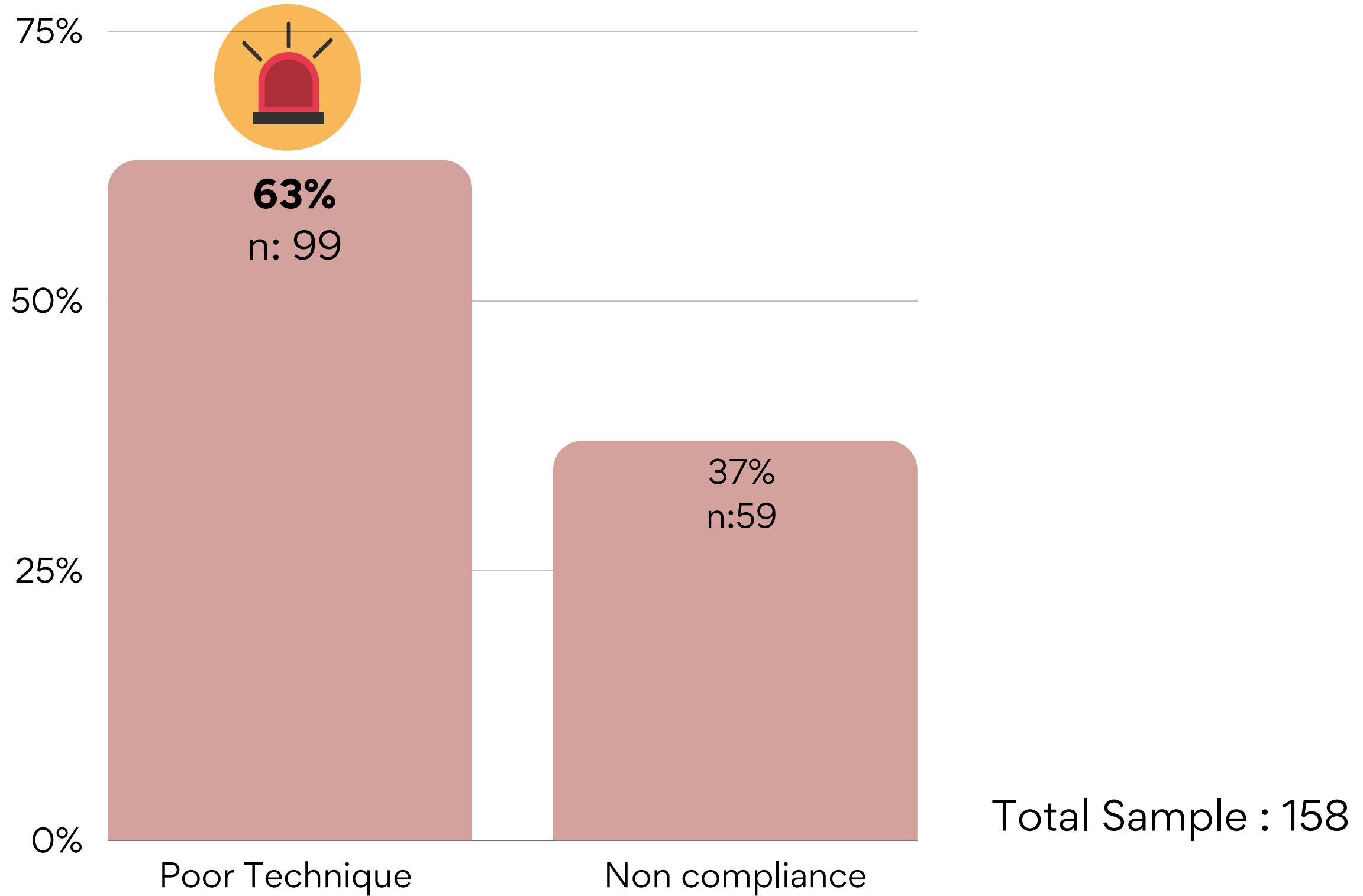
Modified Counselling form -
to assess compliance

adopt and adapt from RMTAC

CYCLE 3

A multi-language
Counselling Aid Video

CYCLE 1



RESULTS FROM VERIFICATION STUDY

CYCLE 1: PROBLEM

1. Does not have scoring to measure improvement in technique

2. Does not identify which specific steps requires intervention

RESPIRATORY

Name :		Unit:		
TASK 1	Education On Pathophysiology (Asthma & COPD)			
	<ul style="list-style-type: none"> Please tick (✓) YES for correct instruction or sequence. Please tick (✓) NO for incorrect instruction or sequence. 			
Introduce yourself and the purpose of counselling				
A	ASTHMA	Yes (1)	No (0)	Remarks
1	PATHOPHYSIOLOGY OF ASTHMA			
	1. Chronic inflammatory diseases of the airways.			
	2. Tightening of muscles around airways (narrowed), swelling (inflamed) and thick mucus is produced and clogs up the airways (obstructed).			
	3. Hyper-responsiveness = very sensitive.			
	4. Sign and symptoms of asthma are shortness of breath, wheezing, chest tightness and cough.			
2	TRIGGERING FACTORS			
	1. Know the triggering factors.			
3	MEDICATION DELIVERY DEVICES			
	1. The inhaler device is the preferred route of delivery for asthma medication.			
	2. It allows direct and faster delivery of the medication into the airways compared to oral medication.			
	3. The likelihood of systemic side effects is also reduced.			
4	DIFFERENTIATE THE RELIEVER AND CONTROLLER MEDICINES AT FIRST COUNSELLING SESSION			
	A. RELIEVER			
	E.g. Inhaled Short Acting Beta Agonist (SABA)			
	1. Reverse the airway bronchoconstriction.			
	2. To relieve asthma symptoms: shortness of breath and wheezing.			
	3. To bring reliever medicine everywhere they go.			
	4. Can be used 10-15 minutes before exercise for Exercise Induced Bronchoconstriction (EIB).			
	B. CONTROLLER			
	E.g. Inhaled corticosteroid (ICS) alone or combination of ICS + long acting beta agonist (ICS + LABA).			
	1. Reduce inflammation in the airways.			
2. Must be used regularly as directed by doctor in order to prevent asthma attacks.				
NOTE: If both controller and reliever inhalers are required, use the reliever inhaler FIRST, followed by the controller inhaler.				
5				
6	Adherence to inhaled corticosteroids			
	1. Emphasize on the importance of adherence as controller inhaler.			
	2. Minimum time to observe the effect is at least 2 - 3 weeks of usage.			

CYCLE 1: STRATEGIES FOR CHANGE

Problems

Does not have scoring to measure improvement in technique

Does not identify which specific steps requires intervention

Solutions

Modified Counselling
Technique Checklist with
scoring

adopt and adapt from RMTAC

CYCLE 1: SOLUTION

Inhaler Technique Checklist (Indicate YES (1) or NO (0) if step was performed in proper sequence)							
Visit	MDI	Score	Turbuhaler	Score	Accuhaler	Score	MDI & Spacer
1	1. Shake inhaler and removes cap.		1. Unscrew and lifts off the cover.		1. Place outer case in one hand and thumb of the other hand on the thumb grip. Pushes thumb back until a "CLICK" sound is heard.		1. Shakes inhaler and removes cap.
2							
3							
4							
5							
1	2. Breathe out completely and comfortably.		2. Hold inhaler upright Turn the grip as far as it will go in 1 direction and turns it back again until a "CLICK" sound is heard.		2. Hold horizontally. Slides the lever away as far as it will go until another "CLICK" sound is heard.		2. Connect inhaler and spacer.
2							
3							
4							
5							
1	3. Place mouthpiece into mouth and press canister ONCE.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely and comfortably.
2							
3							
4							
5							
1	4. Inhale slowly and deeply through inhaler.		4. Place the mouthpiece between teeth and seal lips to mouthpiece. Breathe in forcefully and deeply through the mouth.		4. Seal lips to mouthpiece and inhales steadily and deeply.		4. Insert spacer into mouth OR apply mask to face and press canister ONCE.
2							
3							
4							
5							
1	5. Hold the breath for 4-10 seconds.		5. Removes inhaler from the mouth before breathing out again.		5. Removes the Accuhaler from mouth and holds breath for about 10 seconds, then breathe out slowly.		5. Inhale slowly and deeply and holds breath for 4-10 seconds OR take 5-10 normal breaths while lips remain on spacer.
2							
3							
4							
5							
1	6. Wait 30seconds before next puff.		6. Repeat step 2 to 5 if more than one dose is required. Replace the cover.		6. Slide thumb grip back to its original position until a "CLICK" sound is heard and unit closes.		6. Wait 30 seconds before next puff.
2							
3							
4							
5							
1	TOTAL		TOTAL		TOTAL		TOTAL
2							
3							
4							
5							

* Technique score rating : (6) Good ; (4-5) Satisfactory ; (0-3) Poor

Modified counselling checklist with scoring at each step

Easy identification on which step needs more attention

With scoring, able to monitor progress

COUNSELLING TECHNIQUE CHECKLIST

RESPIRATORY

Name :		Unit:		
TASK 1	Education On Pathophysiology (Asthma & COPD)			
	<ul style="list-style-type: none"> Please tick (✓) YES for correct instruction or sequence. Please tick (✗) NO for incorrect instruction or sequence. 			
Introduce yourself and the purpose of counselling				
A	ASTHMA	Yes (1)	No (0)	Remarks
1	PATHOPHYSIOLOGY OF ASTHMA			
	1.	Chronic inflammatory diseases of the airways.		
	2.	Tightening of muscles around airways (narrowed), swelling (inflamed) and thick mucus is produced and clogs up the airways (obstructed).		
	3.	Hyper-responsiveness = very sensitive.		
	4.	Sign and symptoms of asthma are shortness of breath, wheezing, chest tightness and cough.		
2	TRIGGERING FACTORS			
	1.	Know the triggering factors.		
3	MEDICATION DELIVERY DEVICES			
	1.	The inhaler device is the preferred route of delivery for asthma medication.		
	2.	It allows direct and faster delivery of the medication into the airways compared to oral medication.		
	3.	The likelihood of systemic side effects is also reduced.		
4	DIFFERENTIATE THE RELIEVER AND CONTROLLER MEDICINES AT FIRST COUNSELLING SESSION			
	A. RELIEVER			
	E.g. Inhaled Short Acting Beta Agonist (SABA)			
	1.	Reverse the airway bronchoconstriction.		
	2.	To relieve asthma symptoms: shortness of breath and wheezing.		
	3.	To bring reliever medicine everywhere they go.		
	4.	Can be used 10-15 minutes before exercise for Exercise Induced Bronchoconstriction (EIB).		
	B. CONTROLLER			
	E.g. Inhaled corticosteroid (ICS) alone or combination of ICS + long acting beta agonist (ICS + LABA).			
	1.	Reduce inflammation in the airways.		
2.	Must be used regularly as directed by doctor in order to prevent asthma attacks.			
5	NOTE: If both controller and reliever inhalers are required, use the reliever inhaler FIRST, followed by the controller inhaler.			
	Adherence to inhaled corticosteroids			
6	1.	Emphasize on the importance of adherence as controller inhaler.		
	2.	Minimum time to observe the effect is at least 2 - 3 weeks of usage.		

Inhaler Technique Checklist (Indicate YES (1) or NO (0) if step was performed in proper sequence)								
Visit	MDI	Score	Turbuhaler	Score	Accuhaler	Score	MDI & Spacer	Score
1	1. Shake inhaler and removes cap.		1. Unscrew and lifts off the cover.		1. Place outer case in one hand and thumb of the other hand on the thumb grip. Pushes thumb back until a "CLICK" sound is heard.		1. Shakes inhaler and removes cap.	
2								
3								
4								
5								
1	2. Breathe out completely and comfortably.		2. Hold inhaler upright Turn the grip as far as it will go in 1 direction and turns it back again until a "CLICK" sound is heard.		2. Hold horizontally. Slides the lever away as far as it will go until another "CLICK" sound is heard.		2. Connect inhaler and spacer.	
2								
3								
4								
5								
1	3. Place mouthpiece into mouth and press canister ONCE.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely, away from the mouthpiece.		3. Breathe out completely and comfortably.	
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3								
4								
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1	4. Inhale slowly and deeply through inhaler.		4. Place the mouthpiece between teeth and seal lips to mouthpiece. Breathe in forcefully and deeply through the mouth.		4. Seal lips to mouthpiece and inhales steadily and deeply.		4. Insert spacer into mouth OR apply mask to face and press canister ONCE.	
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4								
5								
1	5. Hold the breath for 4-10 seconds.		5. Removes inhaler from the mouth before breathing out again.		5. Removes the Accuhaler from mouth and holds breath for about 10 seconds, then breathe out slowly.		5. Inhale slowly and deeply and holds breath for 4-10 seconds OR take 5-10 normal breaths while lips remain on spacer.	
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5								
1	6. Wait 30seconds before next puff.		6. Repeat step 2 to 5 if more than one dose is required. Replace the cover.		6. Slide thumb grip back to its original position until a "CLICK" sound is heard and unit closes.		6. Wait 30 seconds before next puff.	
2								
3								
4								
5								
1	TOTAL		TOTAL		TOTAL		TOTAL	
2								
3								
4								
5								

* Technique score rating : (6) Good ; (4-5) Satisfactory ; (0-3) Poor

CURRENT FORM

MODIFIED FORM

CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY



Remediable Factors

Poor Inhaler Technique

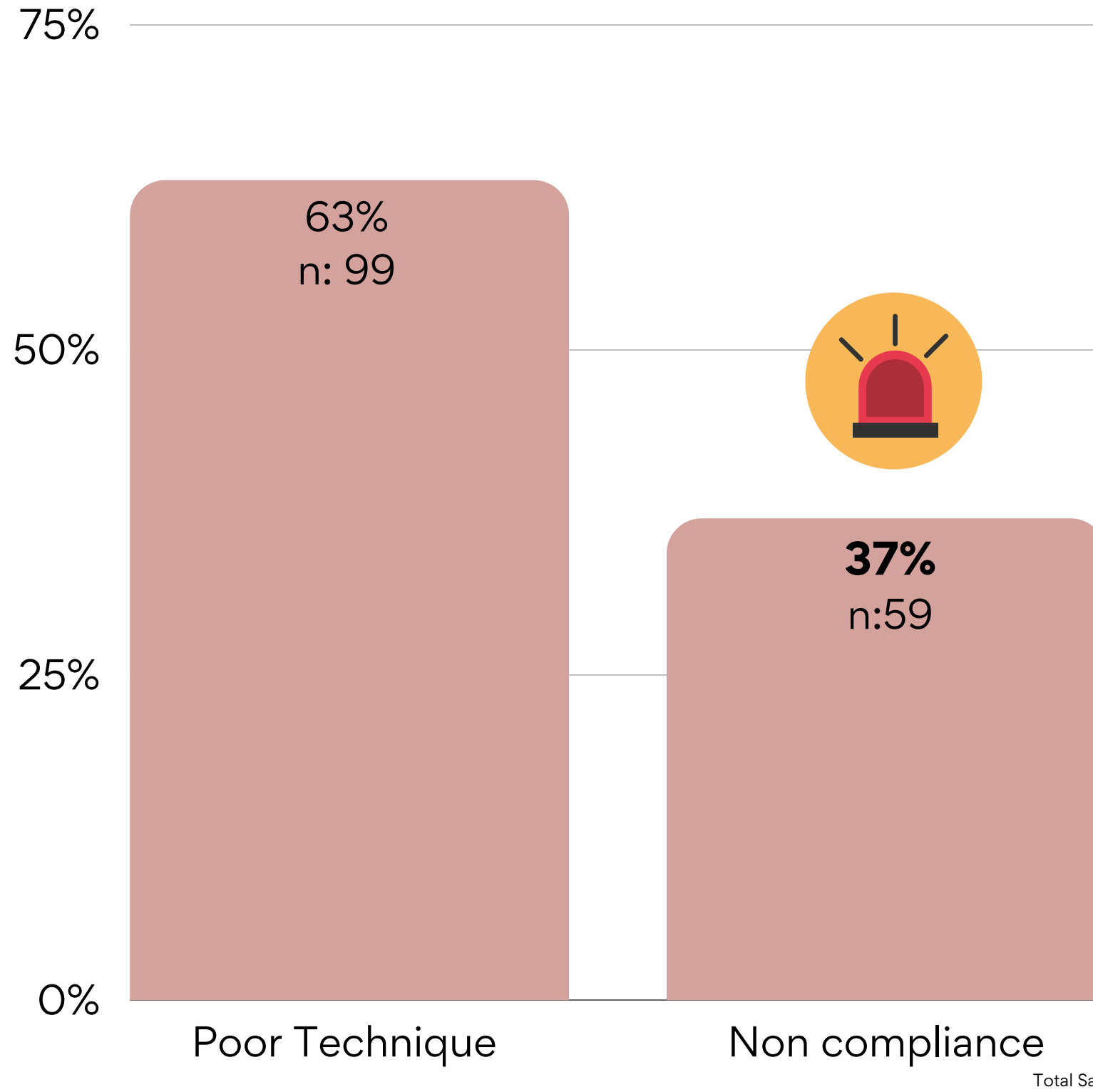
Improper counselling

Incompliance to Preventer Inhaler

Poor assessment of patients symptoms and
exarcerbation

Language Barrier

CYCLE 2



RESULTS FROM VERIFICATION STUDY

CYCLE 2 : PROBLEM

1.

Does not assess patient's compliance

2.

Does not assess patient's symptoms and exacerbations

RESPIRATORY

Name :		Unit:		
TASK 1	Education On Pathophysiology (Asthma & COPD)			
	<ul style="list-style-type: none"> Please tick (✓) YES for correct instruction or sequence. Please tick (✓) NO for incorrect instruction or sequence. 			
Introduce yourself and the purpose of counselling				
A	ASTHMA	Yes (1)	No (0)	Remarks
1	PATHOPHYSIOLOGY OF ASTHMA			
	1.	Chronic inflammatory diseases of the airways.		
	2.	Tightening of muscles around airways (narrowed), swelling (inflamed) and thick mucus is produced and clogs up the airways (obstructed).		
	3.	Hyper-responsiveness = very sensitive.		
	4.	Sign and symptoms of asthma are shortness of breath, wheezing, chest tightness and cough.		
2	TRIGGERING FACTORS			
	1.	Know the triggering factors.		
3	MEDICATION DELIVERY DEVICES			
	1.	The inhaler device is the preferred route of delivery for asthma medication.		
	2.	It allows direct and faster delivery of the medication into the airways compared to oral medication.		
	3.	The likelihood of systemic side effects is also reduced.		
4	DIFFERENTIATE THE RELIEVER AND CONTROLLER MEDICINES AT FIRST COUNSELLING SESSION			
	A. RELIEVER			
	E.g. Inhaled Short Acting Beta Agonist (SABA)			
	1.	Reverse the airway bronchoconstriction.		
	2.	To relieve asthma symptoms: shortness of breath and wheezing.		
	3.	To bring reliever medicine everywhere they go.		
	4.	Can be used 10-15 minutes before exercise for Exercise Induced Bronchoconstriction (EIB).		
	B. CONTROLLER			
	E.g. Inhaled corticosteroid (ICS) alone or combination of ICS + long acting beta agonist (ICS + LABA).			
	5	1.	Reduce inflammation in the airways.	
2.		Must be used regularly as directed by doctor in order to prevent asthma attacks.		
NOTE: If both controller and reliever inhalers are required, use the reliever inhaler FIRST , followed by the controller inhaler.				
6	Adherence to inhaled corticosteroids			
	1.	Emphasize on the importance of adherence as controller inhaler.		
	2.	Minimum time to observe the effect is at least 2 - 3 weeks of usage.		

CYCLE 2: STRATEGIES FOR CHANGE

Problems

Does not assess patient's compliance

Does not assess patient's symptoms and exacerbations

Solutions

Modified Counselling form - to assess compliance

adopt and adapt from RMTAC

Modified Counselling form - to assess symptoms using Asthma Control Test scoring

adopt and adapt from RMTAC

CYCLE 2 : SOLUTION

QA Asthma Assessment Form			Reference Num:	
Patient Demographics				
Name:			Gender:	Male / Female
U/C Number:			Contact Num:	
Age:			Ethnic:	Malay / Chinese / Indian / Others:
Education level:	Primary / Secondary / Tertiary		Occupation:	
Smoking status:	Ex-smoker: _____ Yes: _____ No: _____		Diagnosis:	
Last ED Visit:	ED visit past 1 year	_____ times	Year of Diagnosis:	
Allergic Rhinitis: Yes / No				

Current Medications							
No	Inhalers	Start	Stop	No	Other asthma related medications (for past 3 months)	Start	Stop
1				6			
2				7			
3				8			
4				9			
5				10			

PEFR Readings (l/min)							
Date	Visit				Expected (H)	Personal Best (a / b) x 100%	
	1	2	3	Best (a)			
1st							
2/12							
1/12							
3/12							
6/12							

Asthma Control Test (ACT)										
Visit	Date					1st	2/12	1/12	3/12	6/12
	1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?									
	All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5
	2. During the past 4 weeks, how often have you had shortness of breath?									
	More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5
	3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath,									
	4 or more times a week	1	2 to 3 nights a week	2	Once a week	3	Once or twice	4	Not at all	5
	4. During the past 4 weeks, how often you used your rescue inhaler or nebulizer medication (such as									
	3 or more times a day	1	1 to 2 times a day	2	2 to 3 times a day	3	Once a week or less	4	Not at all	5
	5. How would you rate your asthma control during the past 4 weeks?									
	Not controlled	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5
	* ACT score indicator: (25) Congratulations! ; (20-24) On Target ; (<20) Off Target					Total				

ACT scoring to assess symptoms and exacerbations

Compliance							
Visit	Do you use ur preventer inhaler?		Yes		No		
	How often do you use preventer inhaler?						
	A. Everyday			B. When necessary, during acute asthma attack			
1st visit	Yes		No		Yes	No	
2/12	Yes		No		Yes	No	
1/12	Yes		No		Yes	No	
3/12	Yes		No		Yes	No	
6/12	Yes		No		Yes	No	

Visit	Advice on Asthma Action Plan?		Default Tracing (Call answered?)	
	Yes	No	Yes	No
1st visit	Yes		Yes	No
2/12	Yes		Yes	No
1/12	Yes		Yes	No
3/12	Yes		Yes	No
6/12	Yes		Yes	No

Assessing patient compliance to preventer

CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY

Remediable Factors



Poor Inhaler Technique

Improper counselling

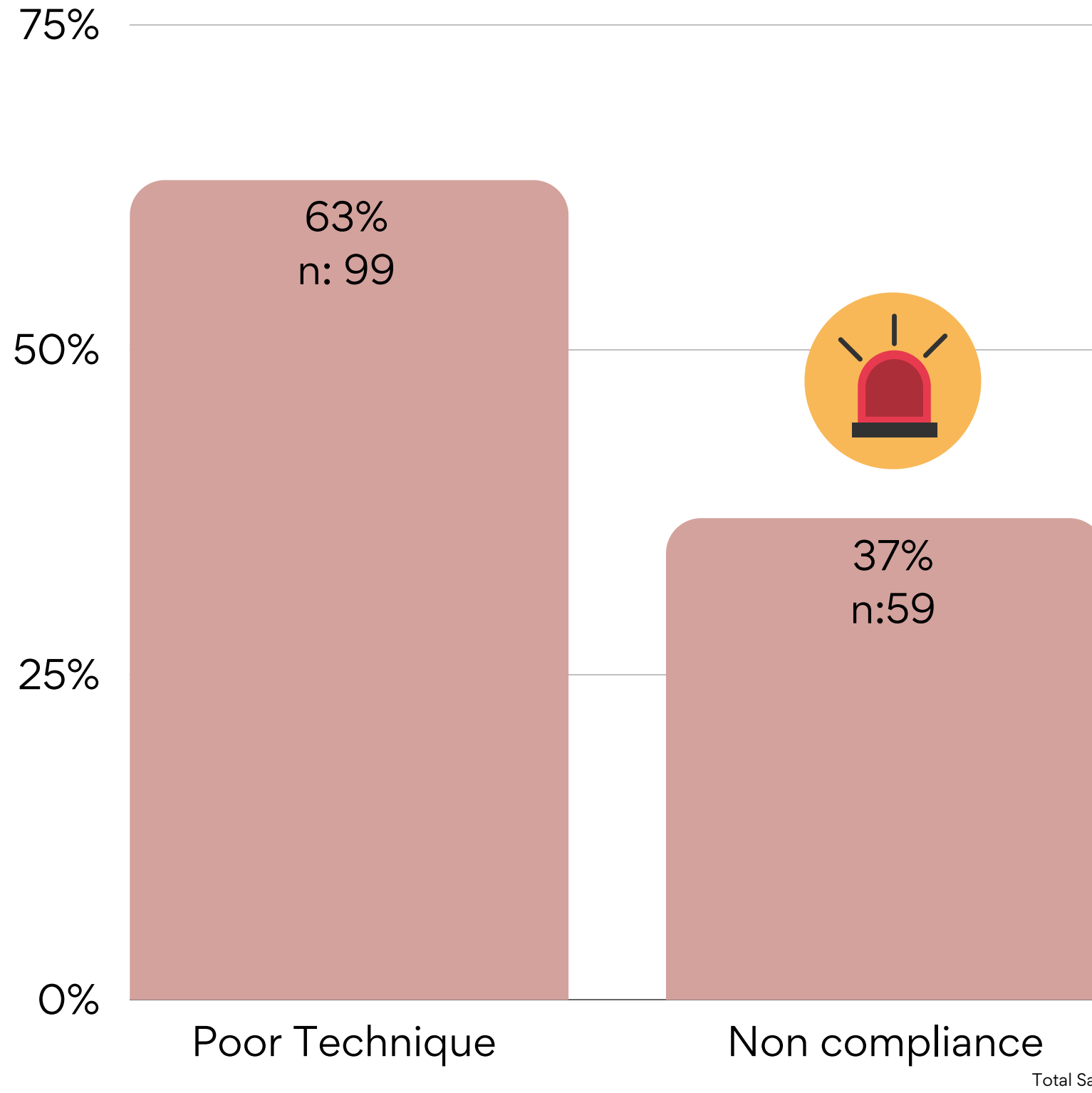
Incompliance to Preventer Inhaler



Poor assessment of patients symptoms and
exarcebation

Language Barrier

CYCLE 3



RESULTS FROM VERIFICATION STUDY

CYCLE 3: PROBLEM

1. High exchange rate among Chinese & Indian Patients
2. High exchange rate among elderly patients

Ethnicity	% of patient
Malay	22.2 %
Chinese	43.1%
Indian	34.7%

Age Group	% of patient
18-30	18.1 %
31-59	15.3 %
>60	66.6 %

CYCLE 3: STRATEGY FOR CHANGE

Problems

High exchange rate among Chinese & Indian Patients

High exchange rate among elderly patients

Solutions

A multi-language
Counselling Aid Video

CYCLE 3 : SOLUTION

A multi-language Counselling Aid Video

The screenshot shows the YouTube channel page for PKD PORT DICKSON, which has 1 subscriber. The channel is categorized under 'HOME', 'VIDEOS', 'PLAYLISTS', 'CHANNELS', and 'ABOUT'. The 'Uploads' section is active, displaying a grid of four videos:

- Video 1:** "Kaunseling Metered- Dose Inhaler(MDI) (Bahasa Tamil)..." with a duration of 2:59 and 2 views, uploaded 43 minutes ago. The thumbnail shows various MDI devices with the text "இன்ஹேலர் வகைகள்" (Inhaler types).
- Video 2:** "Kaunseling Metered-Dose Inhaler(MDI)(Bahasa..." with a duration of 3:02 and 2 views, uploaded 47 minutes ago. The thumbnail shows a healthcare professional speaking.
- Video 3:** "Kaunseling Metered-dose inhaler(MDI)(Bahasa Malay..." with a duration of 3:14 and 3 views, uploaded 49 minutes ago. The thumbnail shows a green PELEGA MDI device.
- Video 4:** "Kaunseling Turbohaler (Bahasa Melayu) Unit Farma..." with a duration of 2:58 and 11 views, uploaded 3 hours ago. The thumbnail shows a healthcare professional holding a Turbohaler device.

The left sidebar contains navigation options: Home, Explore, Shorts, Subscriptions, Library, History, Your videos, Watch Later, and Liked videos. The top navigation bar includes the YouTube logo, a search bar, and icons for video upload, notifications, and the user profile.

CYCLE 3 : SOLUTION

A multi-language Counselling Aid Video



**Bahasa
Melayu**





**Bahasa
Tamil**



**Bahasa
Mandarin**

CYCLE 3 : SOLUTION

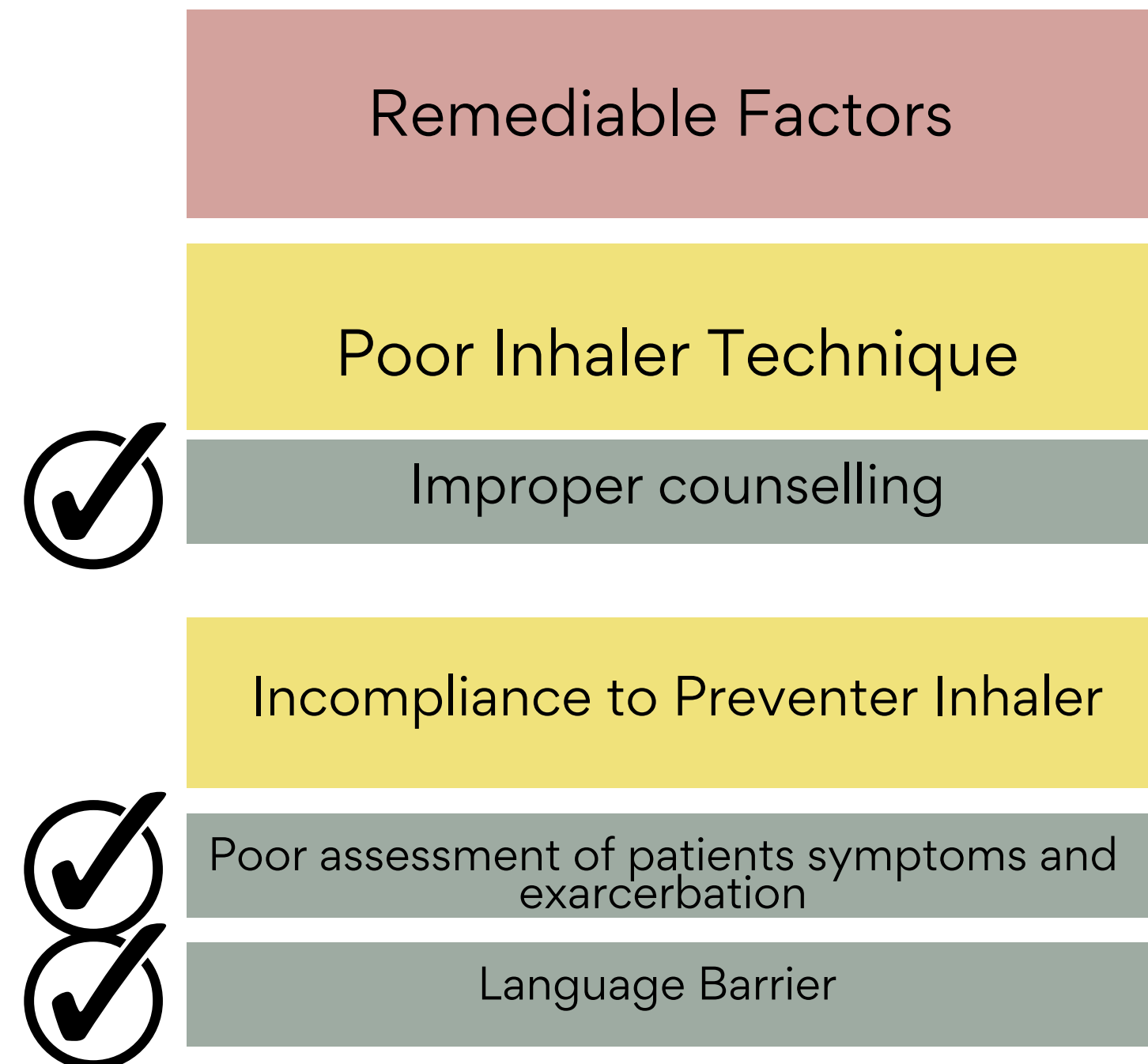
A multi-language Counselling Aid Video

Nama:	[REDACTED]	R _x			Kaunseling MDI bersama Spacer Versi Bahasa Tamil
No. K/P.:	[REDACTED]				
No. Daftar:	[REDACTED]	HOSPITAL NEGERI	[REDACTED]	[REDACTED]	[REDACTED]
Umur:	[REDACTED]				
Tarikh:	[REDACTED]				
Penyakit:	[REDACTED]				
JF001202 PNMB-JB.					

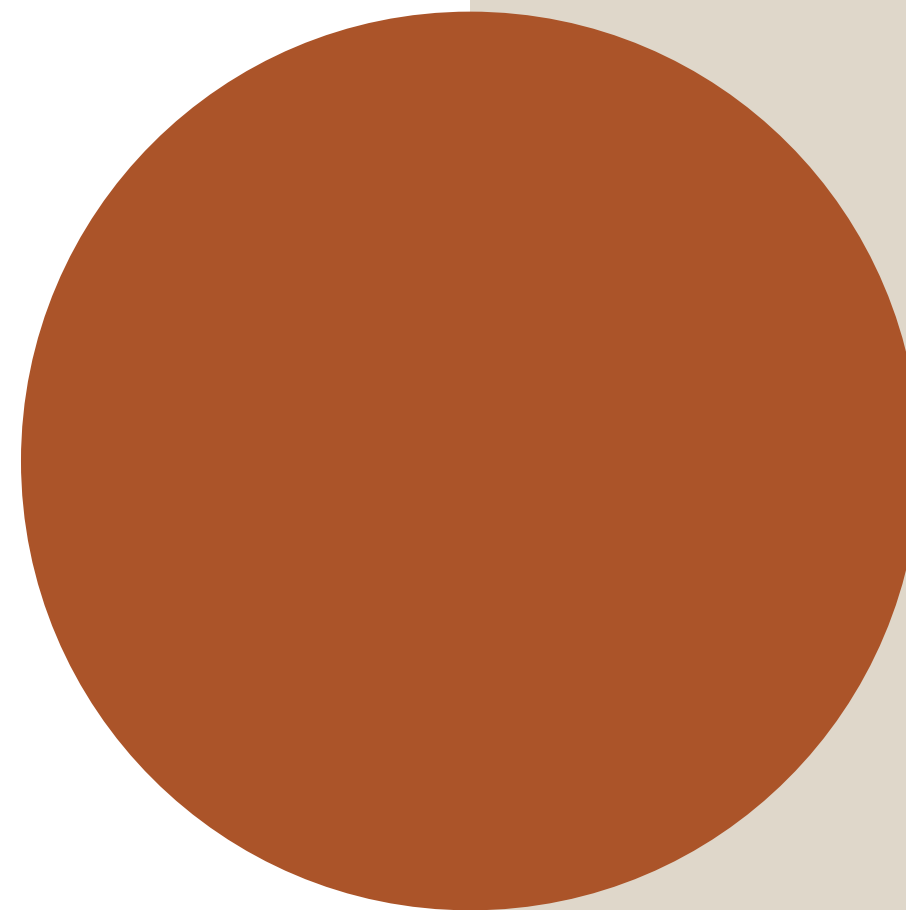
mari salakatael 2p daw = 1/12

CONTRIBUTING FACTORS

MAIN FINDINGS OF THE VERIFICATION STUDY



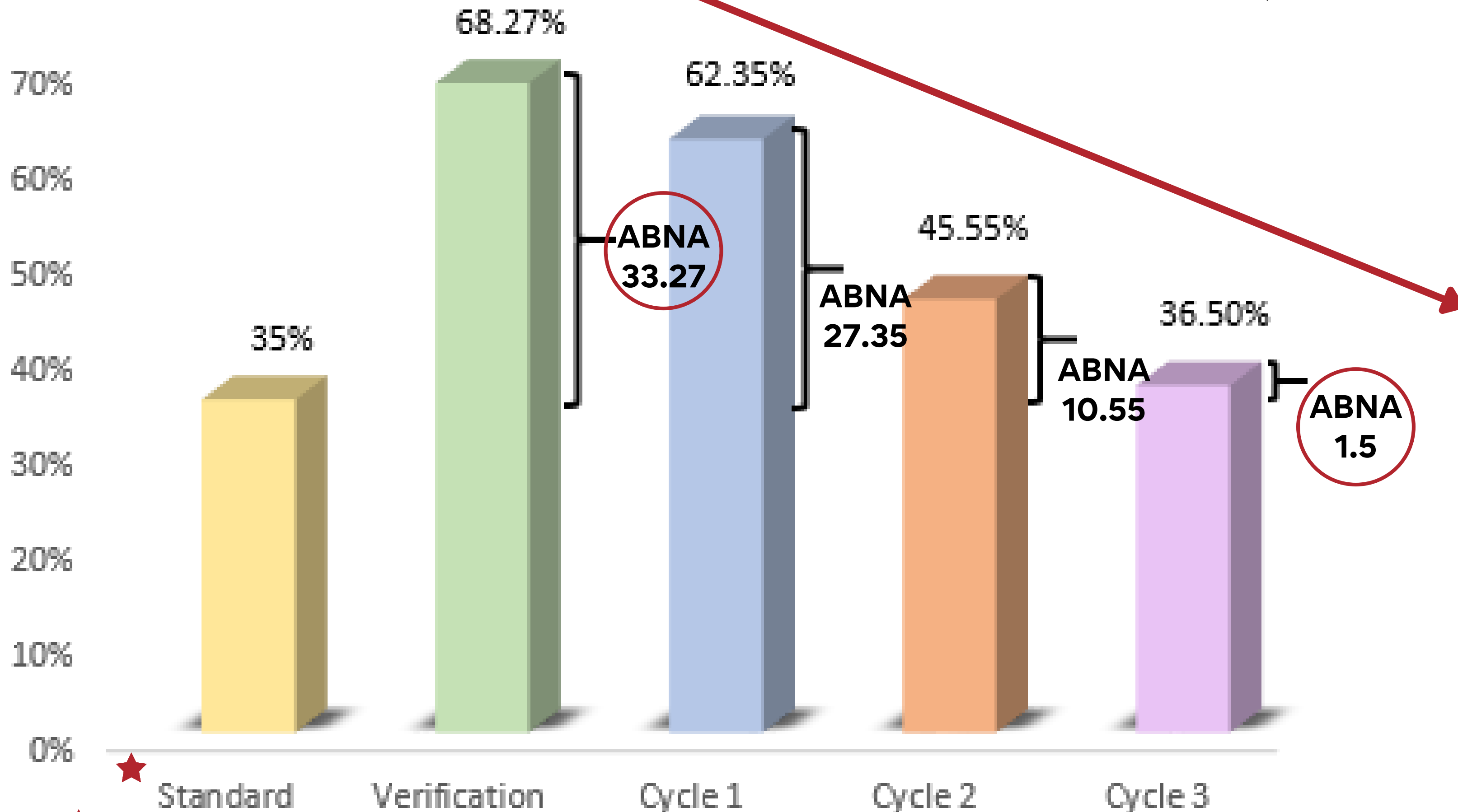
EFFECT OF CHANGE



MODEL OF GOOD CARE (MOGCG)

Process	Criteria	Standard	Verification	Cycle 1	Cycle 2	Cycle 3
Receive prescription/Identify patient	Make sure these detail are correct <ul style="list-style-type: none"> • Right Patient • right medication • right dose • right timing • right route of administration 	100%	100%	100%	100%	100%
Conduct counselling session and assess understanding.	Using standard counselling checklist, <ul style="list-style-type: none"> • assess technique • assess compliance • assess symptoms with ACT score 	100%	50% 0% 0%	100% 30% 0%	100% 80% 100%	100% 100% 100%
Requires follow up, reschedule for next appointment	Reschedule for follow up based on their performance.	100%	100%	100%	100%	100%
Complete all documentation	Recording in PhIS	100%	100%	100%	100%	100%

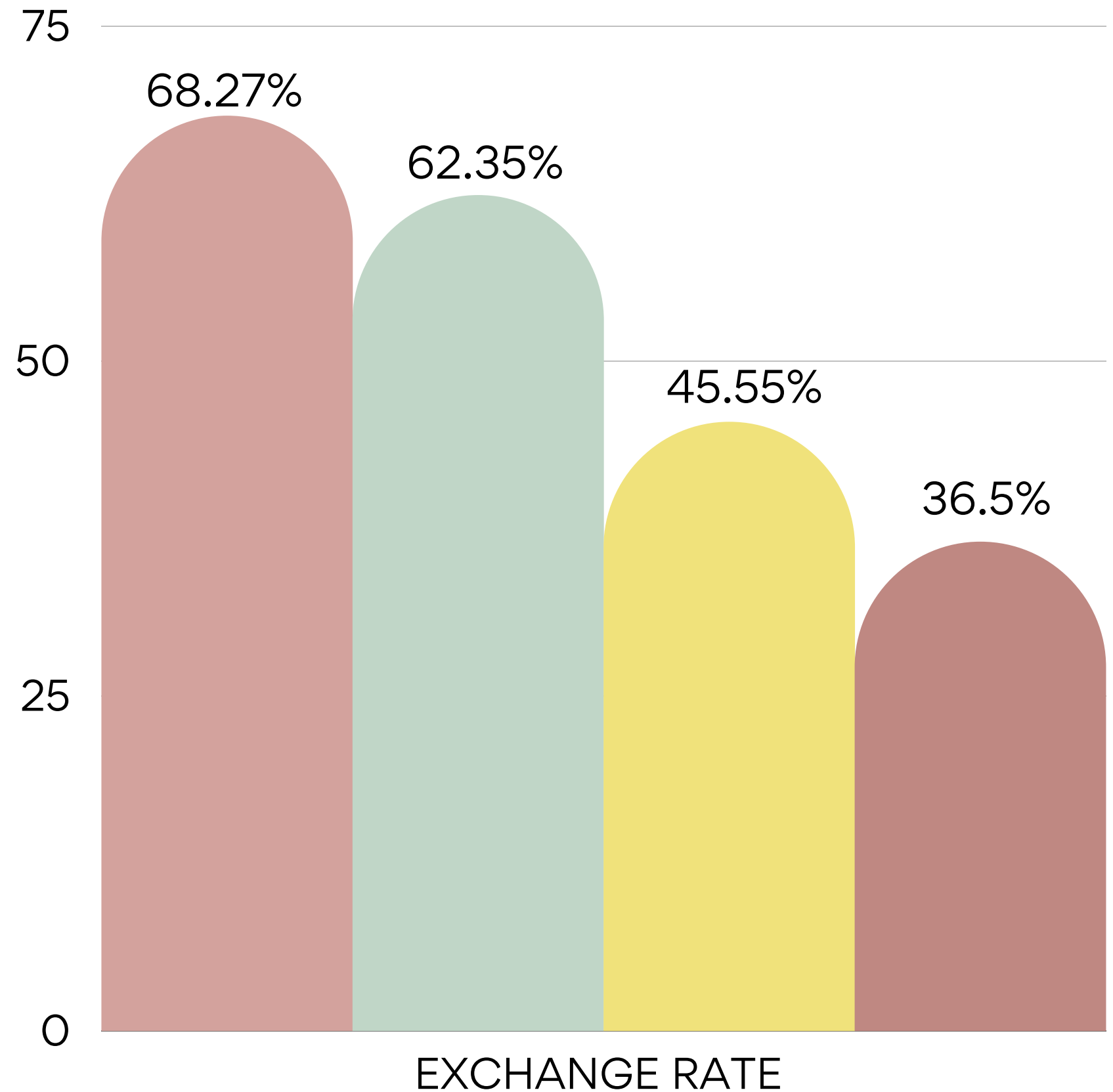
ACHIEVABLE BENEFIT NOT ACHIEVED (ABNA)⁶⁹



★ based on consensus in the Asthma Committee Meeting 2018 (PKDPD)

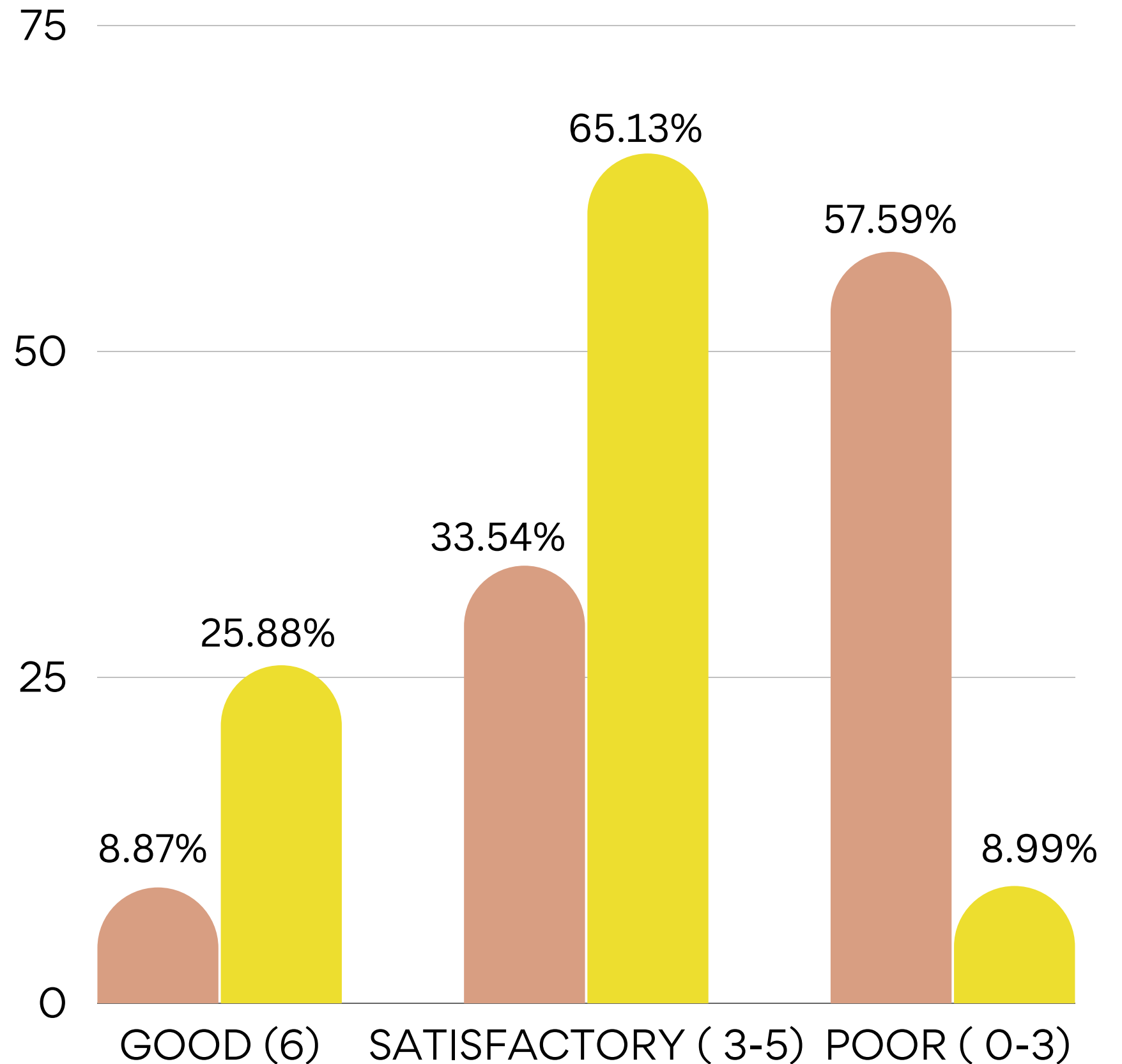
1. PERCENTAGE OF MDI SALBUTAMOL EXCHANGE

The percentage of MDI Salbutamol exchange **REDUCED** from **68.27%** during the **verification phase** to **62.35%** at **cycle 1**, to **45.55%** at the end of **cycle 2** and finally to **36.5%** in **cycle 3**.



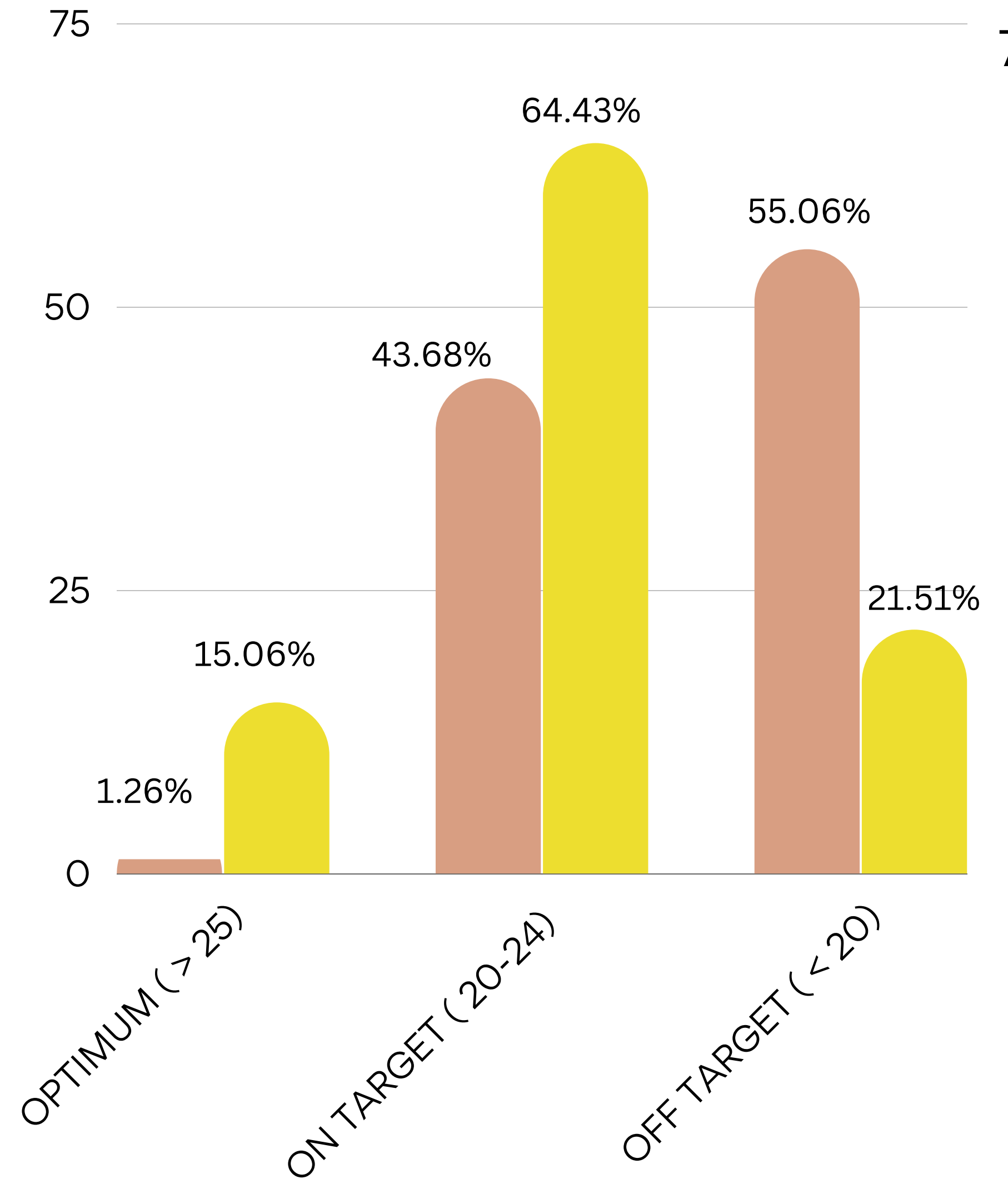
2. IMPROVEMENT IN INHALER TECHNIQUE

- The total percentage of patients with **good technique increased** from **8.87% to 25.88%** after intervention.
- The total percentage of patients with **poor technique decreased** from **57.6% to 8.99%**.



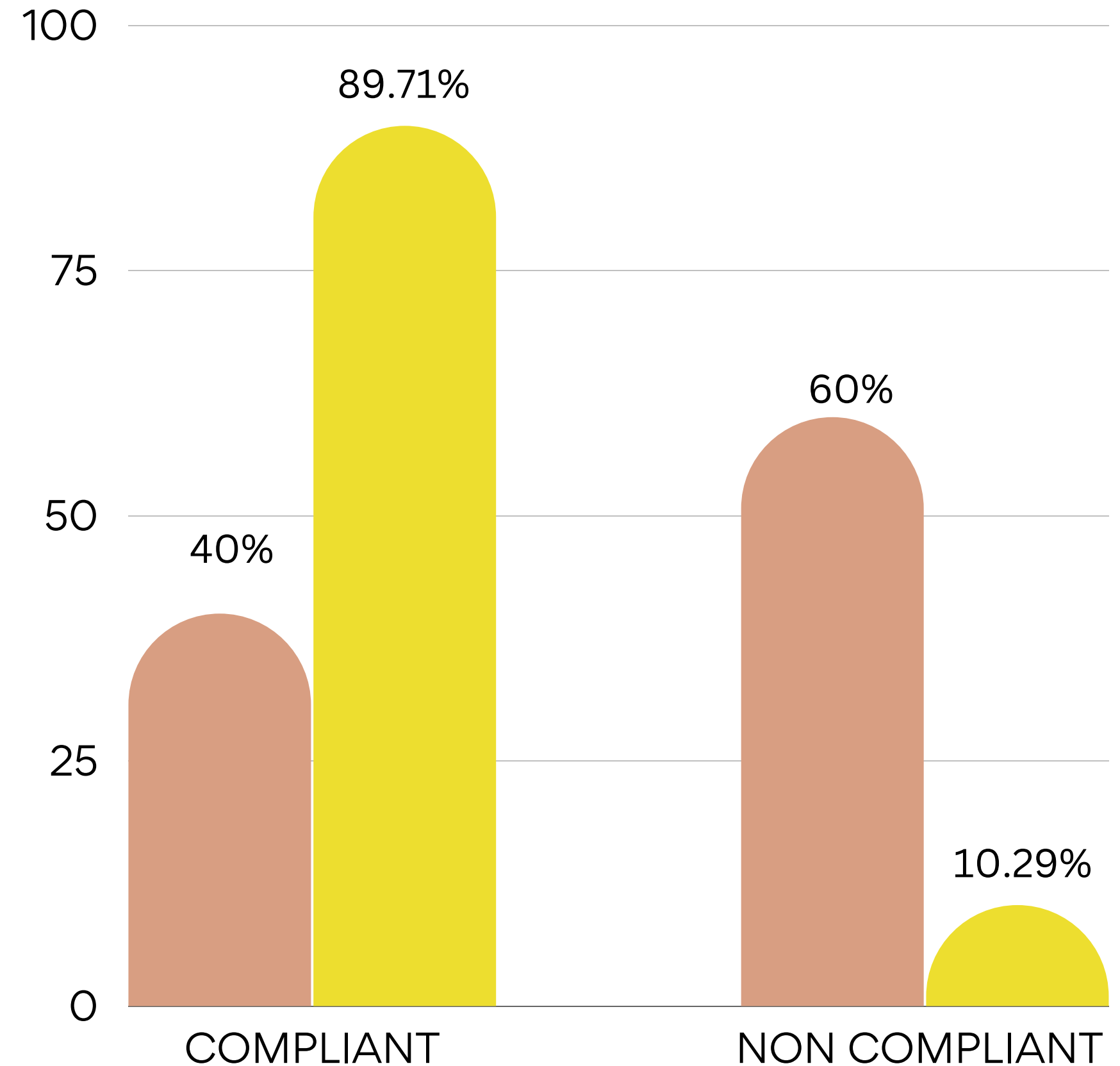
3. REDUCTION IN SYMPTOMS AND EXACERBATION (ACT SCORING)

- Total percentage of patients with **Optimum ACT Score (> 25)** **increased** from 1.26% to 15.06%.
- Total percentage of patients with **Off Target ACT Score (<20)** **decreased** from 55.06% to 21.51%.



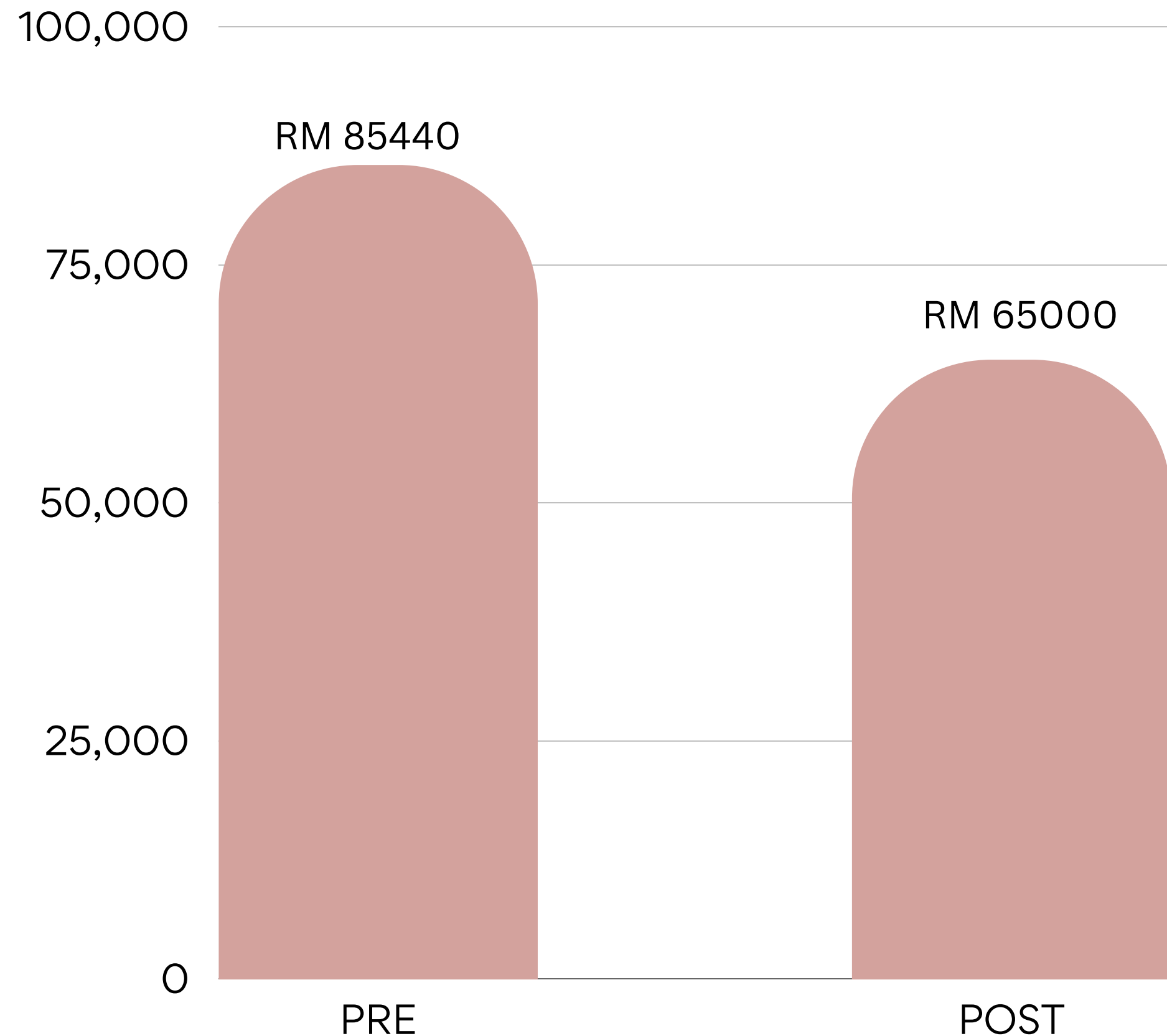
4. IMPROVEMENT IN COMPLIANCE

- Pre Intervention, **only 40%** of total patients recruited are compliant to their preventer inhaler.
- **Post intervention, 89.7%** of the total patients recruited were compliant to their preventer inhaler.



5. EFFECT ON COST OF PURCHASING MDI SALBUTAMOL

- Cost spent on purchasing MDI Salbutamol yearly has **reduced** by **24%** post intervention.



NEW PROCESS OF CARE

Counselling Patient with MDI in health clinics in PKDPD

Receive prescription/Identify patient

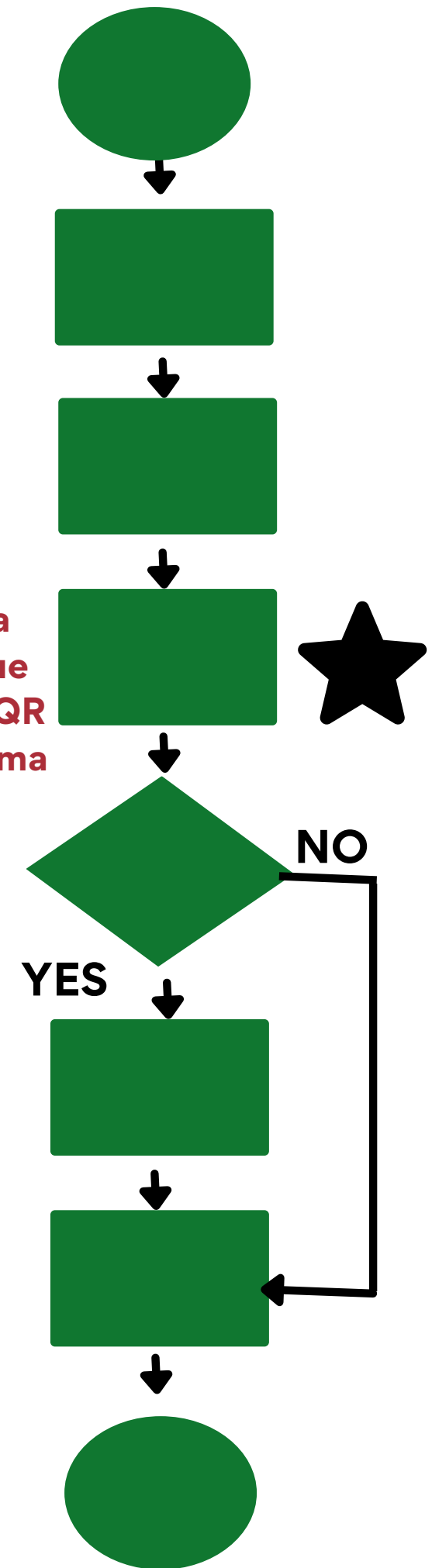
Introduce yourself and purpose of counselling.

Conduct counselling session by using the Asthma Assessment Form And Modified Inhaler Technique Checklist. The Multi Language Counselling Aid QR code is attached to patients prescription or Asthma Book.

Requires follow up?

Reschedule next appointment and record in Follow Up Counselling Registry

Complete all documentation



IN SUMMARY

Specific Objectives

Findings

1.To determine the high percentage of MDI Salbutamol exchange among patients with asthma in PKD Port Dickson

Verification study showed that the percentage of MDI Salbutamol exchange among patients with asthma in PKD Port Dickson was **68.3%**

2.To identify the probable causes contributing to the high percentage of MDI Salbutamol exchange among patients with asthma in PKD Port Dickson.

In the verification study, it was determined that the probable causes are;
1. **Poor technique**
2. **Non Compliance to preventer inhaler**

3.To formulate remedial measure and implement them.

Cycle 1 : Modified Counselling Technique Checklist With Scoring
Cycle 2: Modified Counselling form - to assess symptoms using Asthma Control Test scoring and to assess compliance
Cycle 3: A Multi language Counselling Aid Video

4.To evaluate the effectiveness of the remedial measures.

Percentage of MDI Salbutamol exchange has been **reduced** from **68.27% to 36.5 %**. Hence the **ABNA is narrowed down** from **33.27 to 1.5**.

LIMITATIONS

The limitations are as follows:

1. Patients missed the appointment given resulting in varies follow-up visit.
2. Difficult to change patients negative perception and attitude towards asthma management

LESSONS LEARNT



Improvement in reducing MDI Salbutamol exchange requires good cooperation among healthcare providers.



While implementing the current remedial measures, continuous evaluations and more strategies are needed to ensure good asthma management.

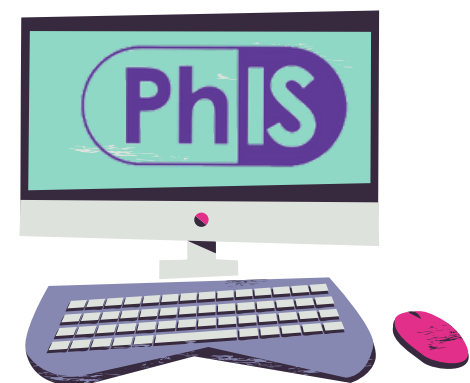
NEXT STEP



Involve all healthcare providers and continue the current strategies and expand to other hospital and health clinics in Negeri Sembilan.



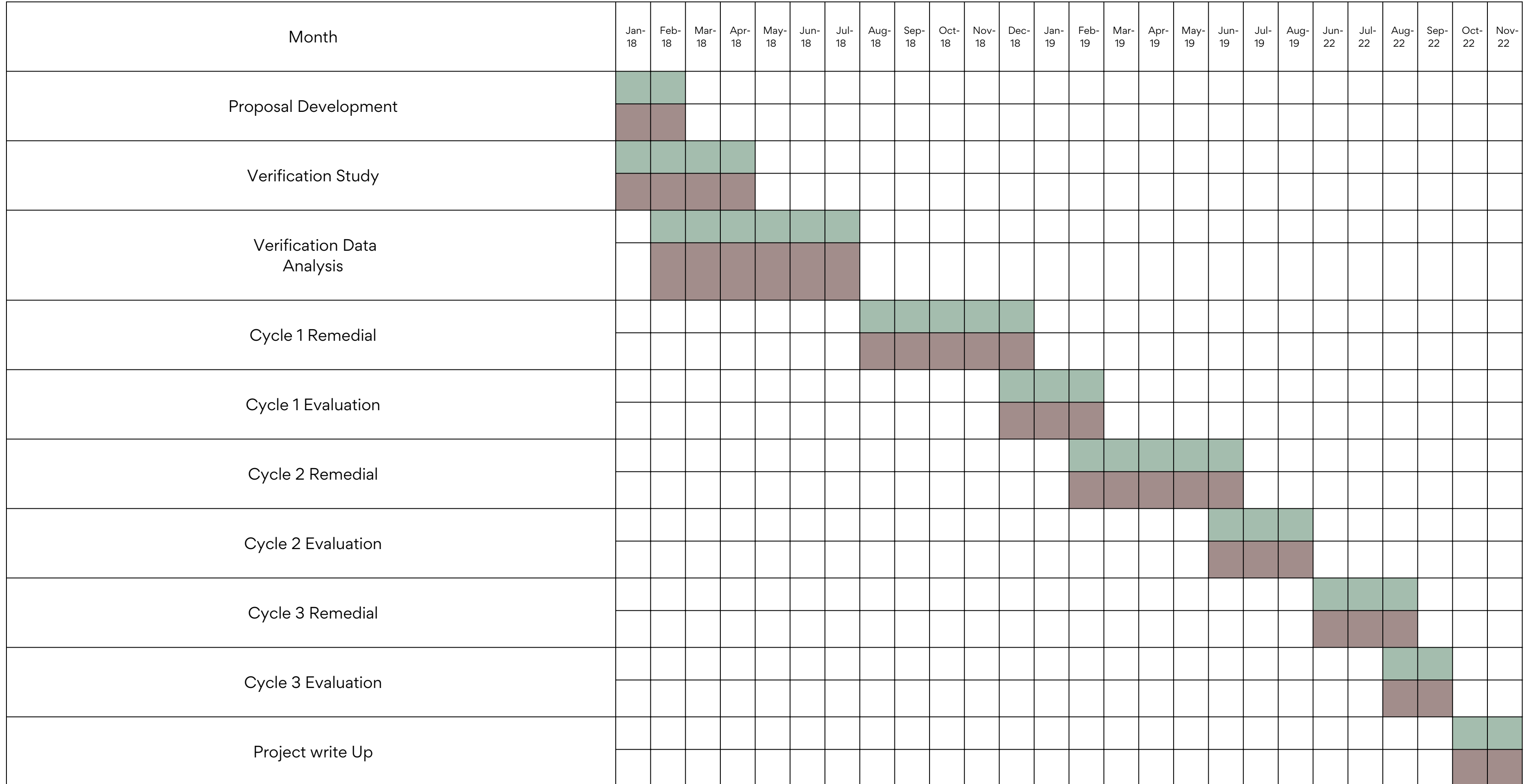
Create a Reminder App for patients to further improve their compliance towards preventer inhaler.



In-cooperate the Modified Counselling Checklist into Pharmacy Information System (PhIS) to ease recording and tracking.

GANTT CHART

Expected
 Actual



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ACKNOWLEDGMENT

Health State Director

Dato' Dr Harlina Bt Abdul Rashid

Deputy Health State Director (Pharmacy) Negeri Sembilan

Pn Ezatul Rahayu Binti Anuar

District Health Officer PKD PD

Dr Esther Rishma Sundram

Head Of Pharmacy Unit PKD PD

Pn Rosmaliza Mohd Taib

Family Medicine Specialist

Dr Azainorsuzila bt Mohd Ahad

Unit Promosi JKN

Mr Renny Martin Raja

Thank You!