PP-10

REDUCING THE NUMBER OF EXPIRED PSYCHOTROPIC MEDICATIONS AT CLINIC-BASED EMERGENCY DEPARTMENTS IN DUNGUN, TERENGGANU

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1. SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

Expired psychotropic medications found in Dungun's clinic-based ED had **increased from 31 to 60 items over two years**, posing **health risks** to users.[1] The use of expired medication is a **ME** classified as **deteriorated drug error**,[2] which compromises patient safety.[3]

ABBREVIATIONS

ED	Emergency Department
ME	Medication Error
MA	Medical Assistant
FEFO	First Expiry, First Out

TERMS & DEFINITION

Near-Expiry	3 to 6 months duration from expiry date

1.1 PROBLEM PRIORITISATION

Problem	S	M	A	R	T	Score
Low Good Prescription Rate	14	15	15	10	10	64
Increasing Number of Expired Psychotropic Medications Found in Emergency Departments	**17**	**17**	**18**	**16**	**17**	**85**
Increasing trend of Cefuroxime usage beyond State Upper Limit for Defined Daily Dose (DDD)	10	10	10	7	6	43
Low follow-up counselling for Diabetes Mellitus (DM) patients	16	10	10	7	6	49
Lack of compliance in penalty reporting procedures to suppliers	7	12	7	7	6	39

Score: 1 - Low   2 - Moderate   3 - High   Group Members Involved: 6

1.2 REASON FOR SELECTION

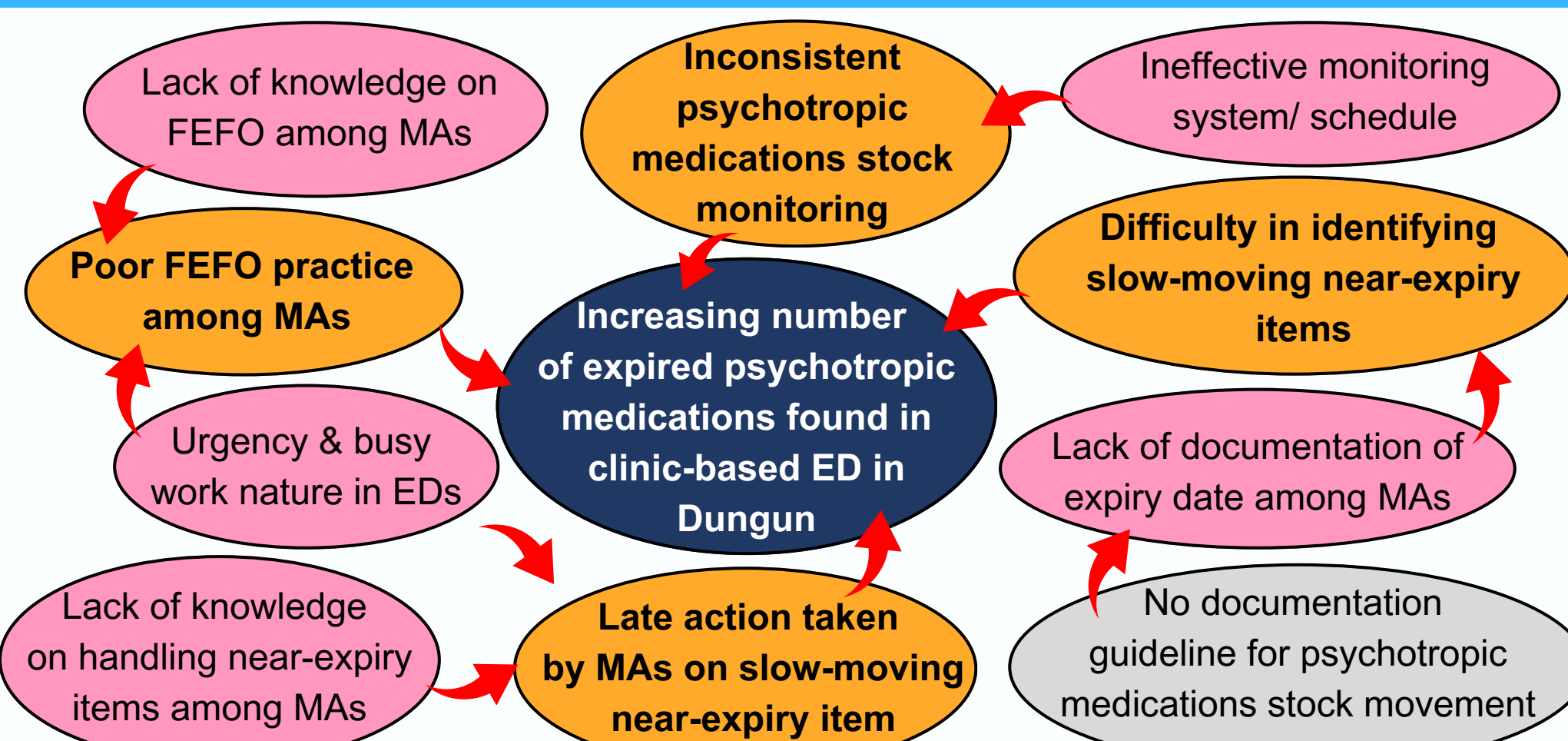| S	• Increases risk of ME • Increases risk of emergency care interruption • Increases wastage • Increases workload (complex disposal procedure)
M	Number of expired psychotropic substances found in emergency departments are measurable
A	Expired medications compromises patient safety and optimal emergency care
R	Remediable through systematic approach and knowledge empowerment
T	Effect to be seen in 1 year

1.3 PROBLEM STATEMENT

Expired psychotropic medications in ED may **increase risk of ME, treatment interruption**, **wastage** and additional **workload** due to complex disposal procedures. Possible **causes** include **poor FEFO practice, difficulty in identifying slow-moving nearly-expired items, late action taken** on slow-moving nearly-expired items and **inconsistent stock monitoring**. We hope to investigate contributing factors and propose pragmatic measures to overcome this problem effectively.

1.4 LITERATURE REVIEW

Douglas F Kupas et al. 2012 study	Recommended **regular stock inspection** with **documentation** of date, time and personnel involved.[1]
Lobna S Mustafa et al, 2019 study	Achieved 47% reduction of deteriorated drug errors in ED via **lectures and posters on proper work procedures**.[3]

1.5 PROBLEM ANALYSIS CHART

2. KEY MEASURES FOR IMPROVEMENT

2.1 OBJECTIVES

General objective

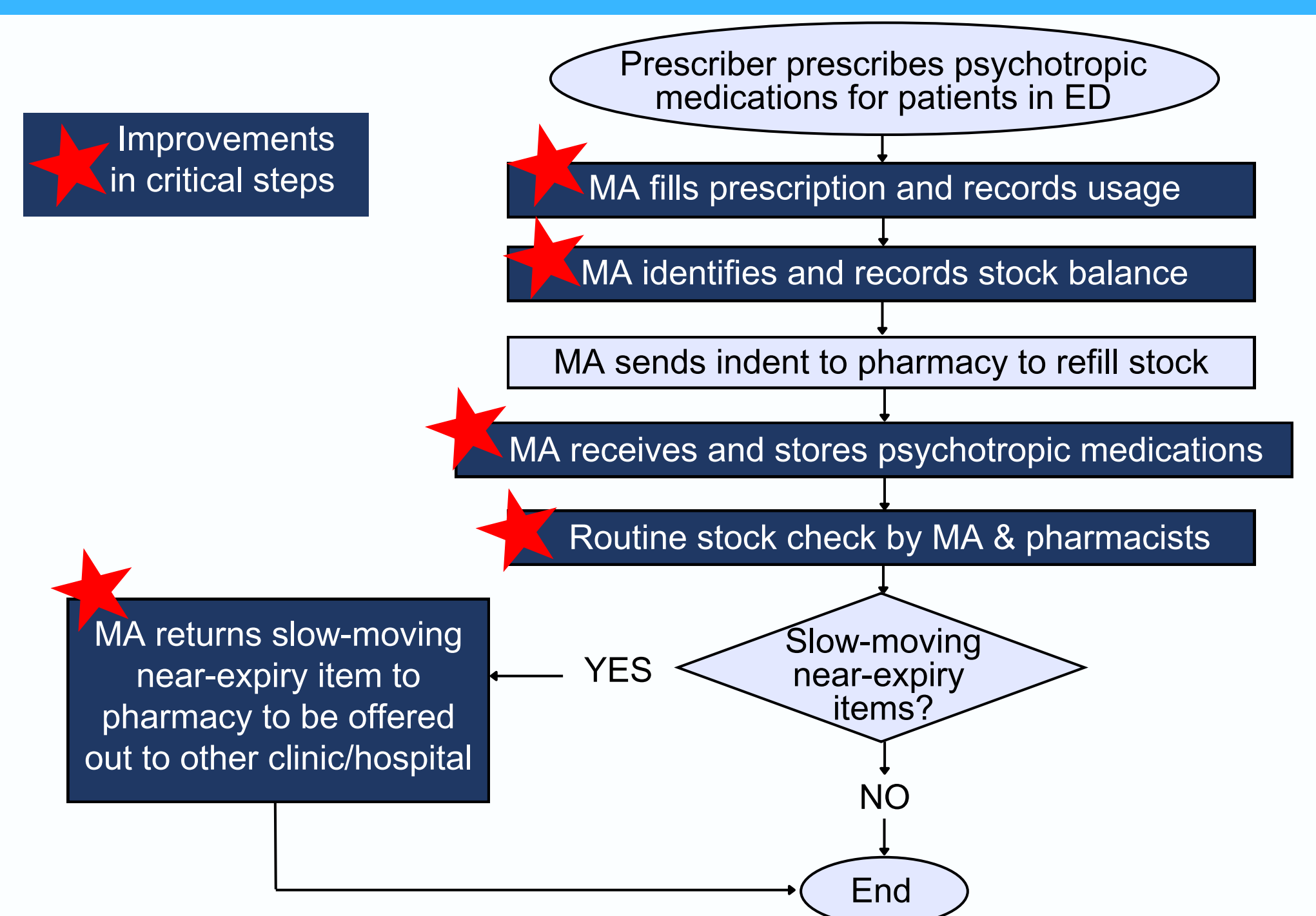To **reduce the number of expired psychotropic medications** in ED to zero.

Specific objective

• To **determine the number of expired psychotropic medications** found in ED
• To **explore possible contributing factors** of the increasing incidents.
• To **formulate strategies** and implement appropriate **interventions** to accomplish the general objective.
• To evaluate the **effectiveness of interventions** implemented.

2.2 INDICATOR & STANDARD

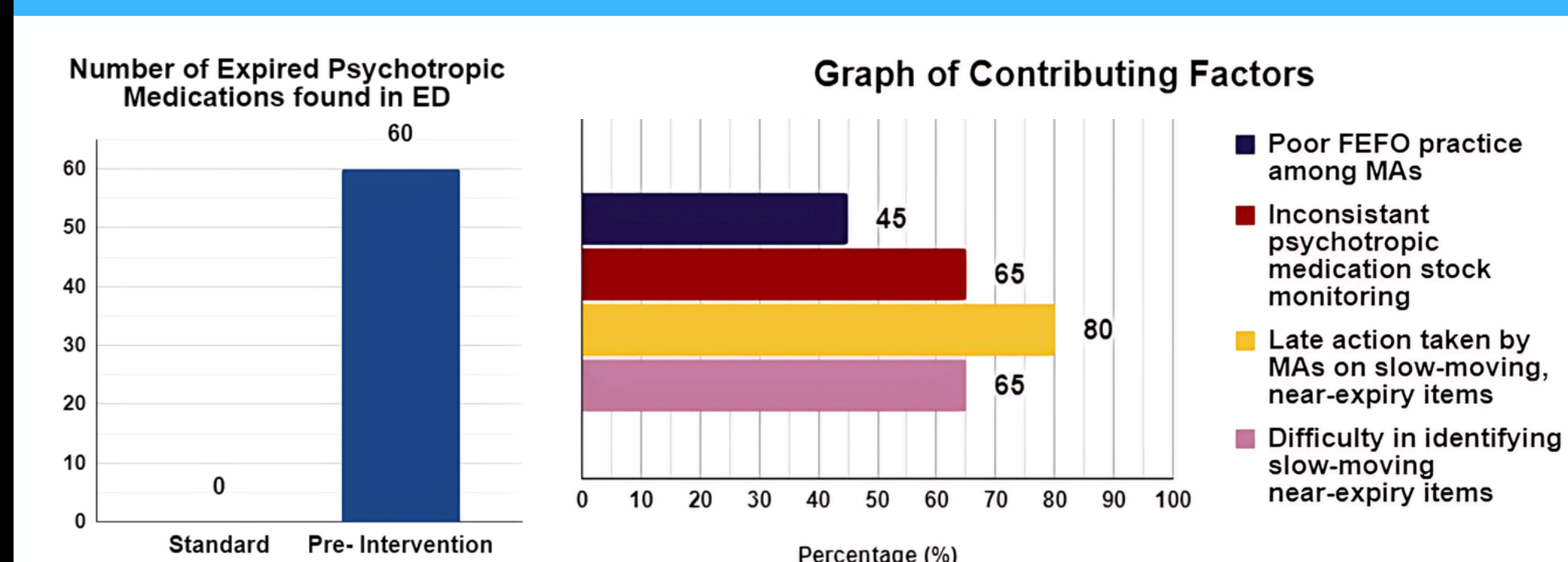| INDICATOR	Number of expired psychotropic medications found at clinic-based ED in Dungun, Terengganu
STANDARD **Zero**	At no expense should expired psychotropic medications be found in ED following the requirements in *Penyeliaan Farmasi ke Fasiliti Kesihatan Primer* and State Pre-Hospital Care Audit.

2.3 PROCESS OF CARE

2.4 MODEL OF GOOD CARE

Critical Step	Criteria	Standard	Pre-Intervention	Post 1	Post 2	Post 3
MA fills prescription	a) Adhere to FEFO	100%	55%	65%	75%	100%
	b) Record usage and expiry date	100%	35%	75%	85%	90%
MA identifies and records stock balance	a) Records stock balance	100%	45%	75%	75%	90%
	b) Records stock balance with expiry date	100%	35%	60%	75%	90%
MA receives and stores psychotropic medications	a) Stock of different expiry date must be stored separately with labels	100%	20%	50%	80%	100%
	b) Stock 3-6 months to expiry must be tagged	100%	20%	35%	75%	100%
Routine stock check by MA and pharmacists	Monthly for MAs	100%	35%	75%	75%	100%
	3-monthly for pharmacists	100%	50%	100%	100%	100%
MA returns slow-moving near-expiry item to pharmacy to be offered out to other facilities	Return within 3-6 months before expiry date	100%	20%	30%	65%	100%

3. PROCESS OF GATHERING INFORMATION

Study	Verification Study	Knowledge and Awareness Assessment	Work Process Audit
Study Duration	Pre-Intervention : Jan - Mar 2022 Cycle 1 : Apr - Sep 2022 Post 1 : Oct 2022 Cycle 2 : Nov 2022 - Jan 2023 Post 2 : Feb 2023 Sustainability Study (Cycle 3) : Mar 2023 - Feb 2024 Post 3 : Mar 2024		
Study Type	Retrospective	Cross-Sectional	
Study Sample	7 health clinics	20 MA	7 health clinics
Sampling Technique	-	Convenience sampling	-
Data Collection Tools	Psychotropic medications record book	Self-administered questionnaire	MOGC Audit checklist
Aim	To obtain the number of expired psychotropic medications found in ED	To assess: • Knowledge and understanding on psychotropic medications stock management • Challenges to comply with MOGC	To evaluate the conformation to MOGC

4. ANALYSIS AND INTERPRETATION

5. STRATEGIES FOR CHANGES

5.1 INTERVENTION CYCLE 1

① **Guidance session** to MAs on management of psychotropic medications in ED and implementation of improved process of care
Cost: RM 20

② **Mini guide** on documentation for psychotropic medications

③ **Reminder note** on psychotropic medication cabinet
Cost: RM 20

PERINGATAN!
- Check & found untuk semua ubat perlu dilakukan setiap bulan.
- Ubat hampir luput (6 bulan sebelum tarikh luput) perlu ditabel dan boleh dipulangkan kepada unit farmasi jika lambat bergerak.

5.2 INTERVENTION CYCLE 2

Auxiliary Labels
Cost: RM 0
(Prepared from available resources)

① **Drug Identity (DI) sticker**

② **Use-First sticker**
GUNA DAHULU

3. Mobile application development

Mobile application development for remote monitoring of psychotropic medications stock in ED & pharmacy. Pharmacy department's initiative to aid ED in stock monitoring as medication safety is a shared responsibility.
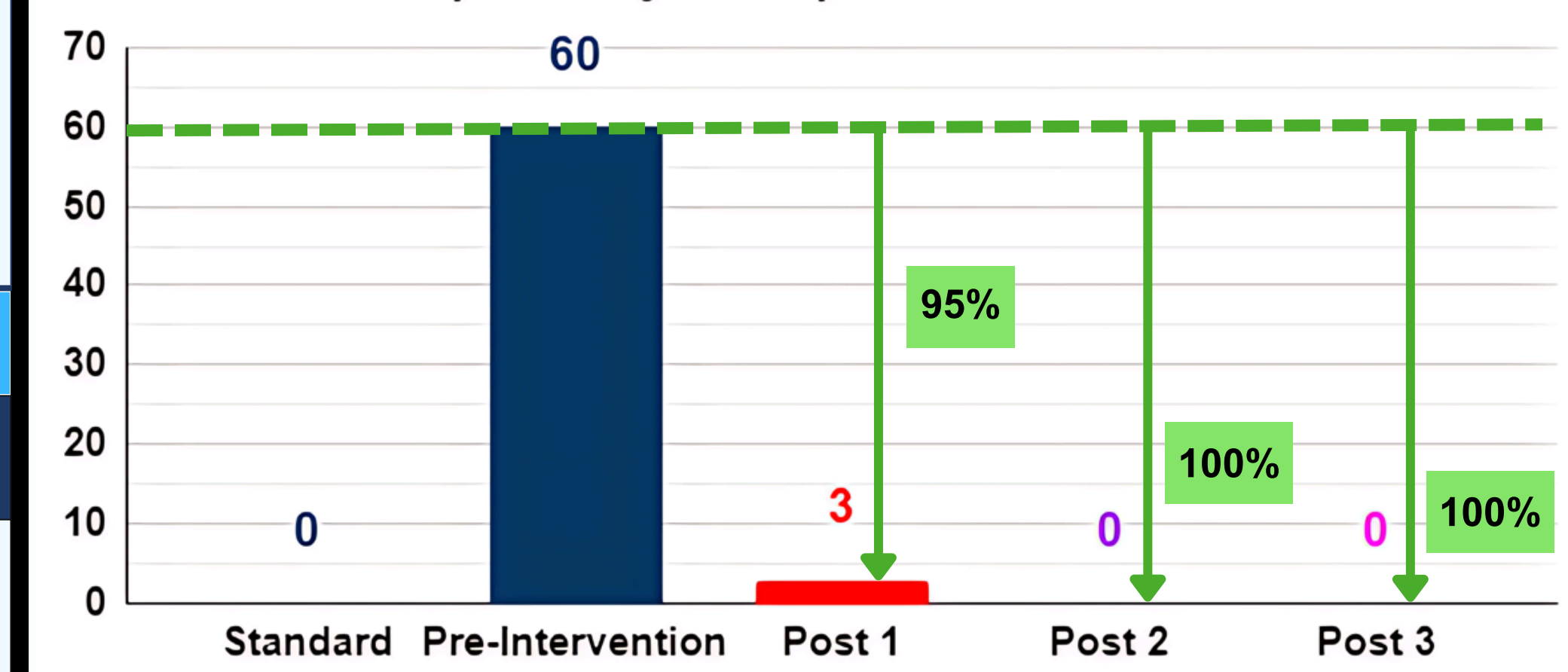

Restricted access (pharmacists only) to reduce data discrepancy and protect data safety

Validated by Information Technology (IT) Unit, JKN Terengganu

Summary of available stock and near-expiry items, sorted by clinic and by item.

Cost: 1. Glide app builder platform : Free version
2. **Copyright** registration via MyIPO : **RM 200**
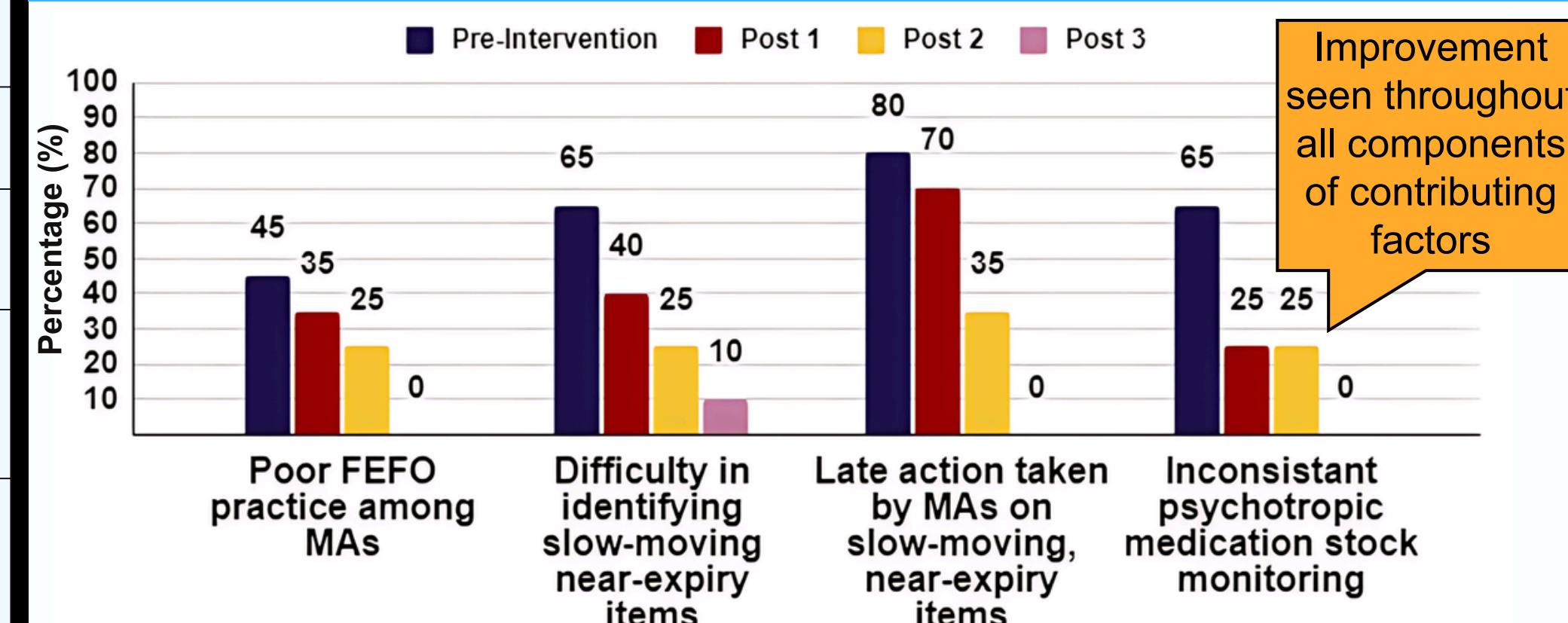(Notification number: **CRLY2024W02218**)

6. EFFECT OF CHANGE

6.1 ACHIEVEMENT OF STUDY INDICATOR

Number of Expired Psychotropic Medications found in ED

6.2 GRAPH OF CONTRIBUTING FACTORS
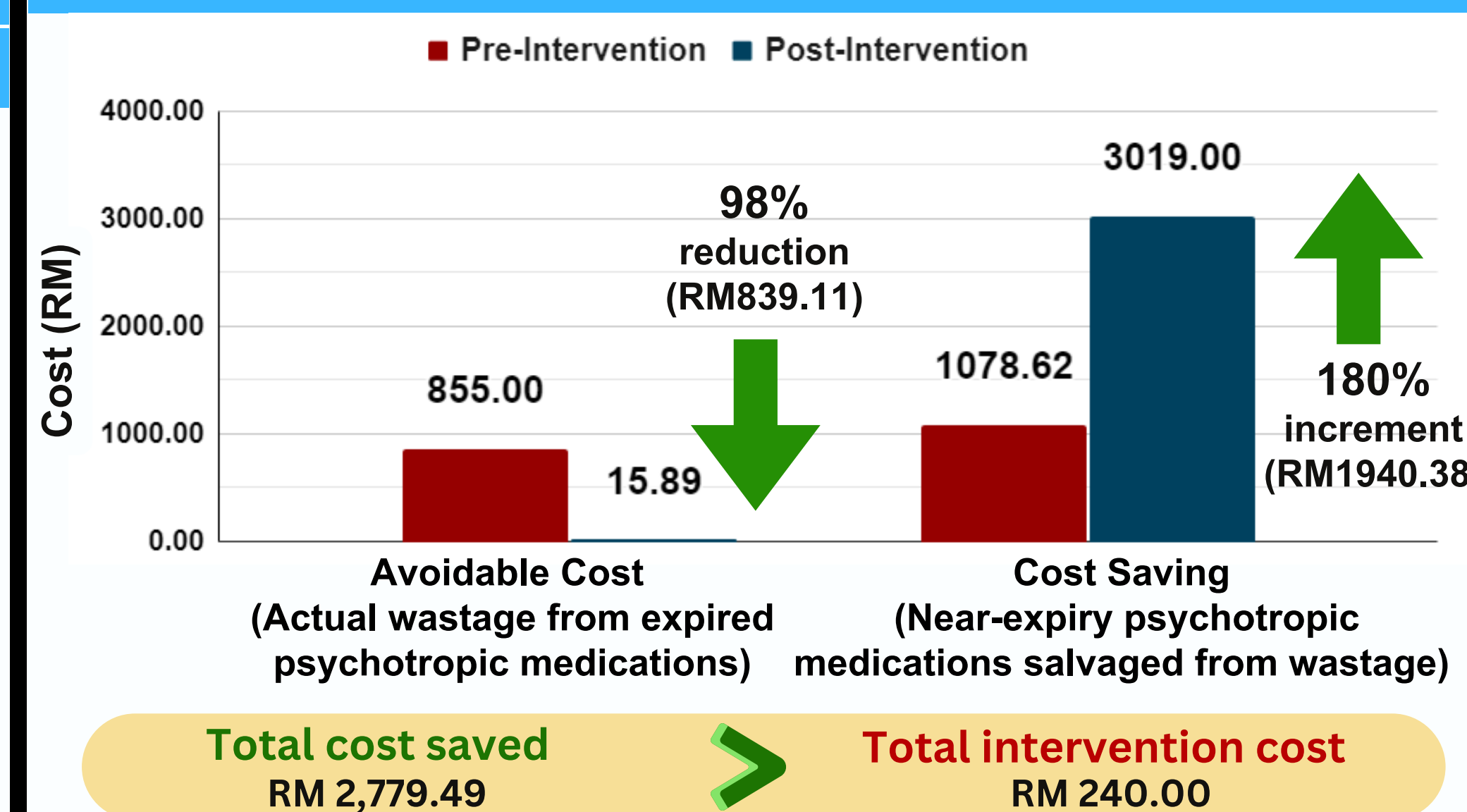Comparison Between Pre and Post-Intervention

Improvement seen throughout all components of contributing factors

6.3 KNOWLEDGE AND AWARENESS ASSESSMENT OUTCOME

Contributing Factor	Variables	Standard	Pre-Intervention	Post 1
Poor FEFO practice among MAs	Knowledge on FEFO	100%	85%	100%
Difficulty in identifying slow-moving near-expiry items among MAs	Awareness on the importance of documenting expiry dates	100%	60%	100%
Late action taken on slow-moving near-expiry items identified among MAs	Knowledge on handling near-expiry items	100%	75%	95%
Inconsistent psychotropic medications stock monitoring	Awareness on routine stock monitoring	100%	60%	100%

6.4 ASSOCIATED AVOIDABLE COST AND COST SAVING
April 2020 - March 2024 (4 Years)

Avoidable Cost (Actual wastage from expired psychotropic medications): 855.00 / 15.89 — 98% reduction (RM839.11)

Cost Saving (Near-expiry psychotropic medications salvaged from wastage): 1078.62 / 3019.00 — 180% increment (RM1940.38)

Total cost saved RM 2,779.49 > **Total intervention cost RM 240.00**

7. THE NEXT STEP

1. The **guidance session** on managing psychotropic medications has been **included in the orientation module** for new MAs and pharmacists.
2. The **use of adhesive auxiliary labels** has been **expanded** to include **floor stock** for EDs, **Mother and Child Health (MCH)** unit and **Klinik Desa**.
3. **PsyMon** is **monitored monthly** at district Logistics Pharmacy level **alongside KWPS-6** for slow-moving items.
4. **Expansion of PsyMon:**
   ○ **Sharing session** was conducted to **health facilities in Terengganu**
   ○ **Two facilities adopted** Psymon into their pharmacy operations.
   ○ In Dungun, the **expansion in PsyMon's function** to **streamline other work processes** is being explored.

LESSON LEARNT

• **Strong collaboration between MAs and pharmacists** improve stock monitoring of psychotropic medications in EDs.
• Main challenge lies in implementing of strategies for change, as transitioning to new practice may require more time, taking into account the hectic work nature in EDs.
• **Continuous work process audit** is crucial to sustain positive results.

References:
1. Kupas DF, Shayhorn MA, Green P, Payton TF. Structured Inspection of Medications Carried and Stored by Emergency Medical Services Agencies Identifies Practices That May Lead to Medication Errors. Prehospital Emergency Care. 2012;16(1):67-75. doi:https://doi.org/10.3109/10903127.2011.621046
2. Acheampong F, Tetteh AR, Anto BP. Medication Administration Errors in an Adult Emergency Department of a Tertiary Health Care Facility in Ghana. Journal of Patient Safety. 2016;12(4):223-228. doi:https://doi.org/10.1097/pts.0000000000000105.
3. Mostafa LS, Sabri NA, El-Anwar AM, Shaheen SM. Evaluation of pharmacist-led educational interventions to reduce medication errors in emergency hospitals: a new insight into patient care. Journal of Public Health. 2019 Jan 4. doi:https://doi.org/10.1093/pubmed/fdy216

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