



1 SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

1.1 INTRODUCTION

- Hemoglobin A1c (HbA1c) = Average blood glucose levels over the past 3 months
- Reflects blood sugar control among T2DM patients
- HbA1c level ≤ 6.5% = Good glycemic target



1.2 PROBLEM PRIORITIZATION

TOPIC	VOTE					
	S	M	A	R	T	TOTAL
Low percentage of HbA1c level ≤ 6.5% among T2DM patients in Klinik Kesihatan Kulim	18	14	16	14	16	78
Low diabetic retinopathy screening via fundus camera	14	14	8	8	10	54
Low uptake for Pap Smear screening	10	11	8	7	9	45
Low mammogram screening rate among high risk group	9	9	12	14	11	55
Low case detection rate for pulmonary tuberculosis	11	11	11	10	14	57

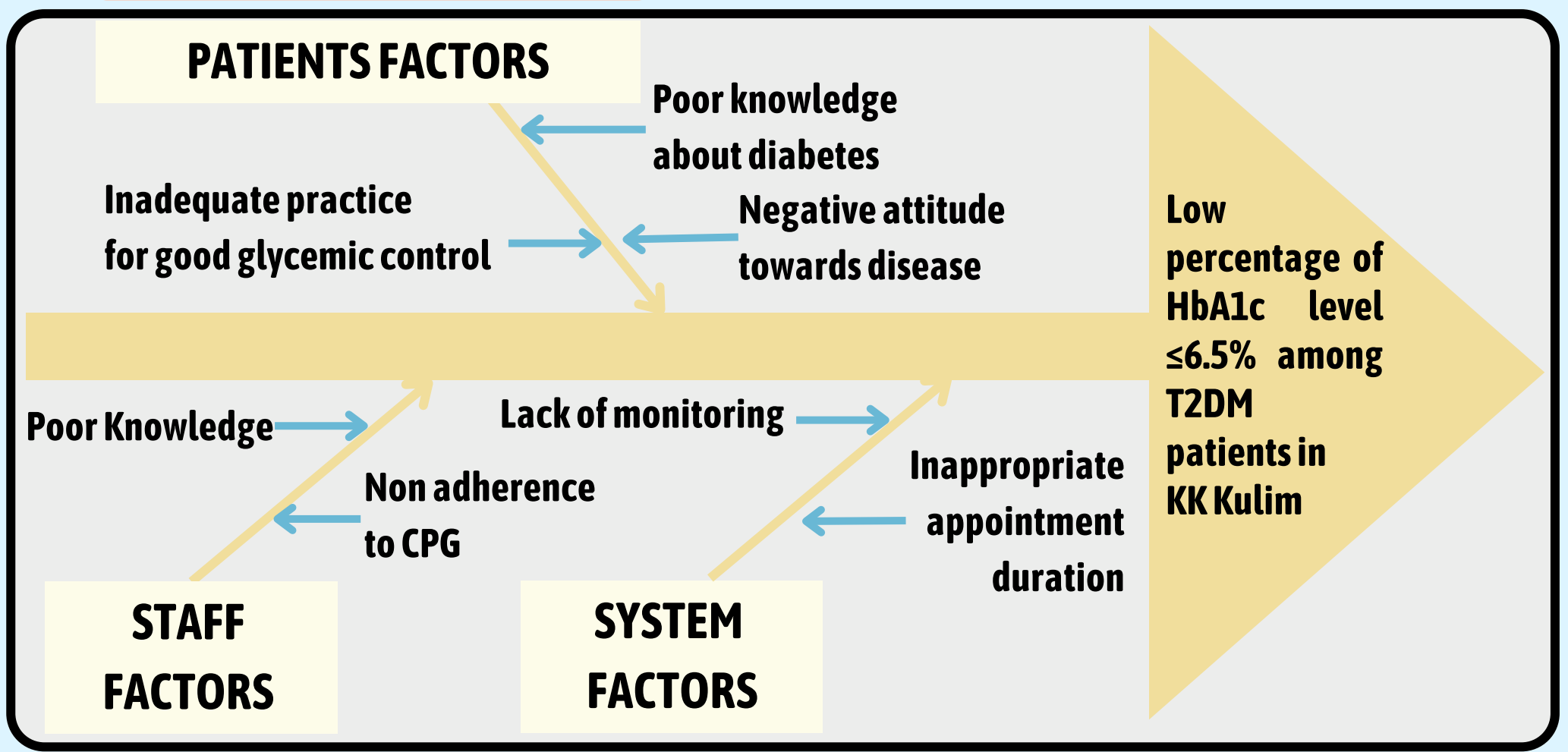
No of voters: 6 Scale: 1 - Lowest Priority, 2 - Medium Priority, 3 - Highest Priority

1.3 RATIONAL SELECTION OF PROBLEM

- SERIOUSNESS**
Poor HbA1c control leads to serious complications. **Only 14.47%** achieved HbA1c ≤ 6.5% in Klinik Kesihatan Kulim.
- MEASURABLE**
Good glycaemic control can be measured by HbA1c level indicated by ≤ 6.5%.
- APPROPRIATENESS**
Optimisation of diabetic education will improve glycaemic control, reduce complications and subsequently improve T2DM patient's quality of life.
- REMEDIBLE**
Improving patients care through HbA1c level reduction by **enhanced diabetes education**.
- TIMELINESS**
Improvement of HbA1c control can be measured by repeating test 3 monthly.

2 KEY MEASURES FOR IMPROVEMENT

2.1 PROBLEM ANALYSIS



2.3 SPECIFIC OBJECTIVES

- To verify the magnitude of poor glycemic control among T2DM patients.
- To identify factors contributing to poor glycemic control among T2DM patients.
- To formulate remedial measures and plan to improve HbA1c level to ≤ 6.5%.
- To evaluate the effectiveness of the remedial measures and plan.

2.4 PERFORMANCE INDICATOR

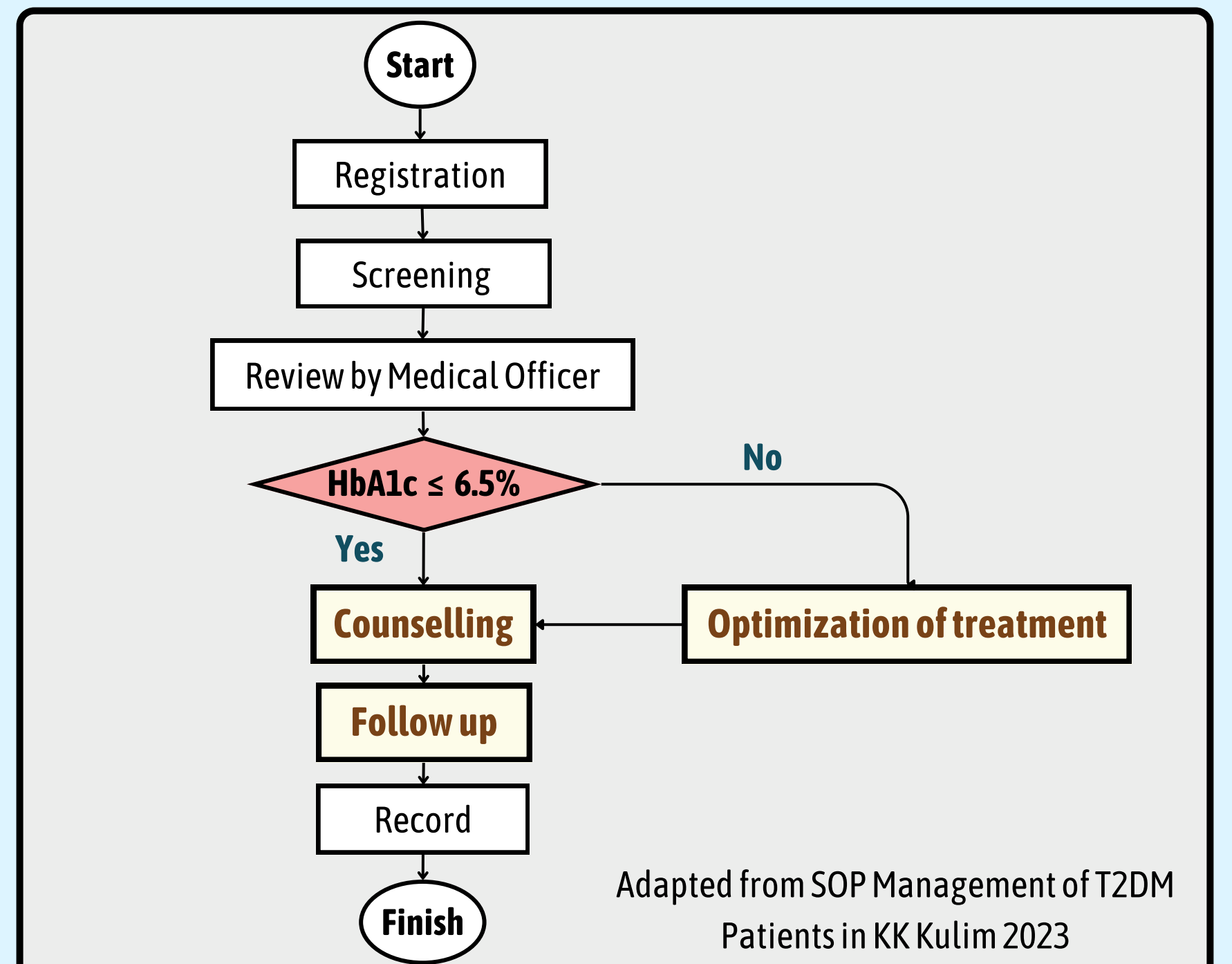
Indicator	The Quality Assurance (QA) indicator is measured as the proportion of percentage of T2DM patients with HbA1c ≤ 6.5%
Formula	$\frac{\text{Number of patients with HbA1c level } \leq 6.5\%}{\text{Number of T2DM patients audited}} \times 100\%$
Standard	≥ 30%

3 PROCESS OF GATHERING INFORMATION

3.1 METHODOLOGY

Type of study	Quality Improvement study
Sample Size	100
Technique	Randomised
Duration	• Pre-intervention: Feb - March 2023 • Post-intervention: July - December 2023
Source of data	• National Diabetes Registry (NDR) • QAP questionnaire • Diabetes Treatment Record
Inclusion criteria	• Patients diagnosed with T2DM and registered under KK Kulim in active follow-up in 2022.
Exclusion criteria	• Patients who loss to follow-up • Patients who transferred out of facility

3.2 PROCESS OF CARE



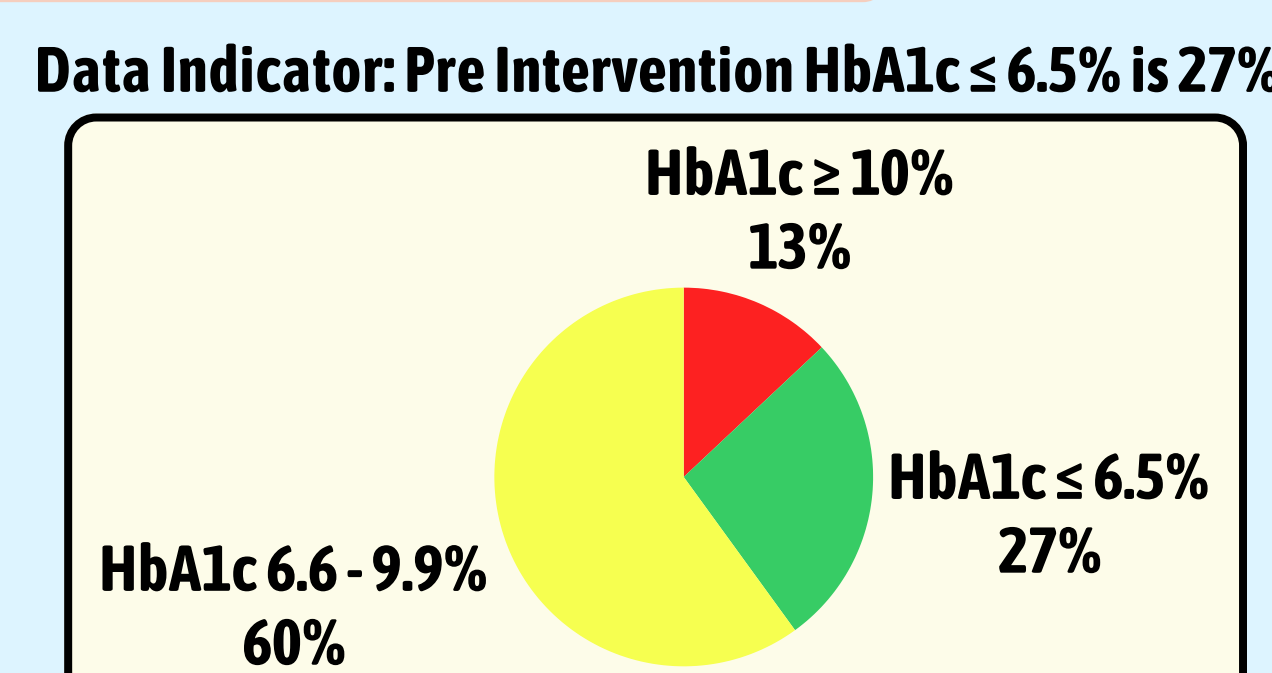
3.3 TOOLS OF GATHERING INFORMATION

Validated questionnaire, Questionnaire Google form to staff, Questionnaire Google form to patients.

NDR Data, DM Green Book.

4 ANALYSIS & INTERPRETATION

4.1 PRE INTERVENTION DATA



Factors Contributing to Poor Glycaemic Control in Diabetic Patient in Klinik Kesihatan Kulim

Poor patient's knowledge: 14.4%

Negative patient's attitude: 20%

Patient's inadequate practice: 20%

Staff non-adherence to guidelines: 66.7%

Fair knowledge among HCWs: 63%

Inappropriate follow-up duration: 86%

4.2 MODEL OF GOOD CARE

NO	PROCESS	CRITERIA	STANDARD	INTERVENTION	
				PRE	POST
1	Optimisation of Treatment	Monitoring of blood glucose and HbA1c • Adjusting the current medication dose • Initiation of insulin • Virtual session (personal and group)	100%	45%	100%
2	Counselling	a) Medical officer • At least 5 topics of diabetes education	≥ 90%	66.7%	100%
		b) Pharmacist • Counselling regarding indication, dose, frequency, side effect, duration of treatment and management of hypoglycaemia and hyperglycaemia	100%	100%	100%
		c) Diabetic educator (DE) • Refer patient to DE if HbA1c > 8%	≥ 60%	99%	100%
3	Follow - up	Virtual appointment given to review SMBG Blood glucose monitoring every visit and HbA1c monitoring • If HbA1c > 6.5%, appointment within 2-3 months • If HbA1c ≤ 6.5%, appointment within 4 months Defaulter tracing	100% 100%	N/A 86%	100% 100%

5 STRATEGY FOR CHANGES

Virtual Diabetes Education using Hyperlinked Digitalised Flipchart

Case-Based Discussion Session

Defaulter Tracing

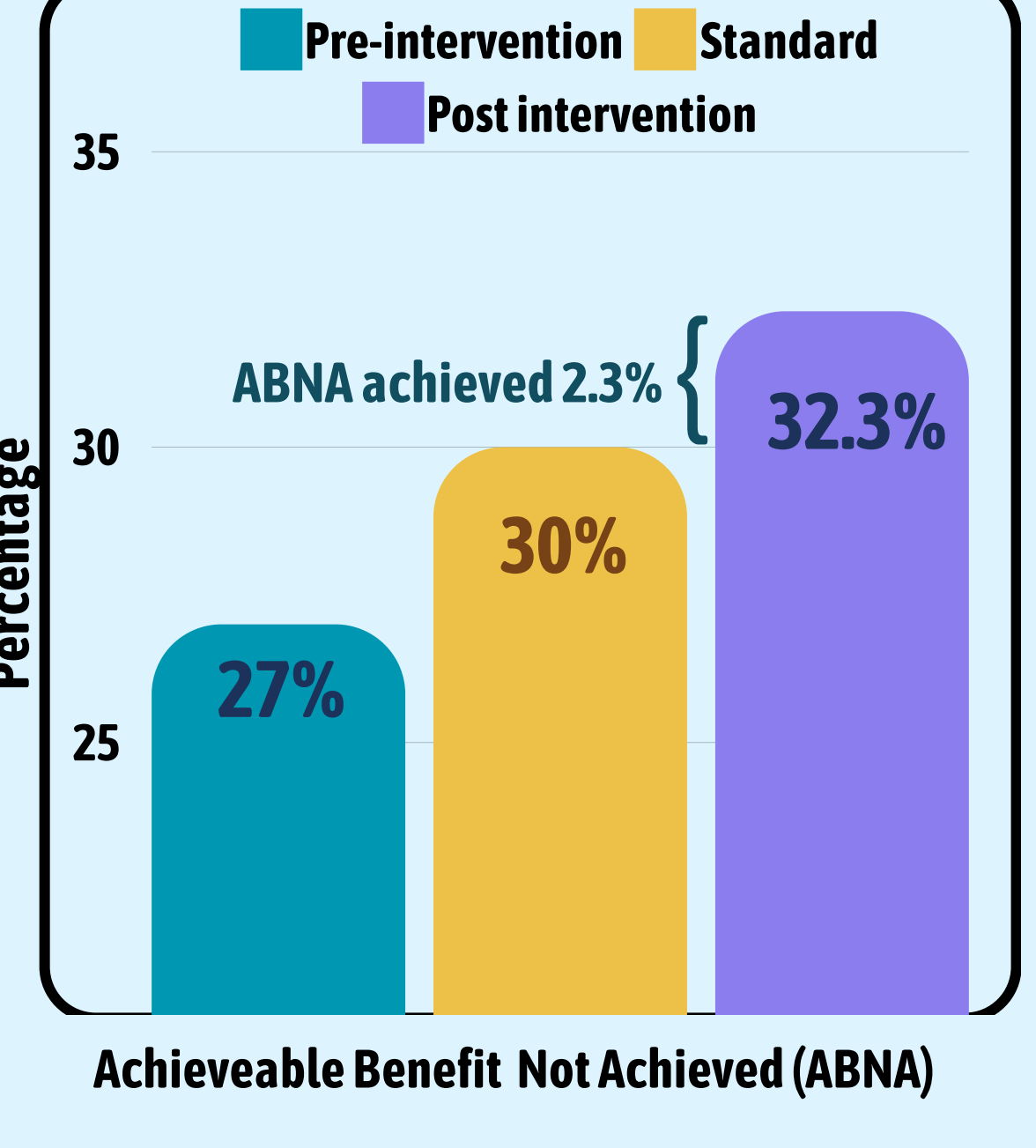
Appointed Person-in-Charge for Virtual Clinic

Date/Time	Name
9/4/2023 9:30 am	SITI HAWA BT AHMAD
9/4/2023 10:00 am	MALEEKA A/P ARUMUGAM
9/4/2023 10:30 am	HASFAZILA BT HASSAN
9/4/2023 11:00 am	KHATIJAH BT ABD RAHMAN
10/4/2023 8:30 am	SELVARANI A/P ARUMUGAM
10/4/2023 9:00 am	CHOO BENG HONG
10/4/2023 9:30 am	SITI KHADIJAH BT ABDULLAH

Staggered Hours Appointments

6 EFFECTS OF CHANGES

6.1 POST INTERVENTION DATA



6.2 SUMMARY EFFECT OF CHANGES

Data Indicator

Patients with HbA1c ≤ 6.5%: 27% → 32.3% (↑ 5.1%)

Patients with HbA1c ≥ 10%: 13% → 5.1% (↓ 7.9%)

Patients with poor knowledge: 14% → 11% (↓ 3%)

Patients with negative attitude: 20% → 2% (↓ 18%)

Patients with inadequate practice: 20% → 6% (↓ 14%)

Staff non-adherence to CPG: 66.7% → 27.2% (↓ 39.5%)

Staff Knowledge: 63% → 85% (↑ 22%)

7 CONCLUSION

- Diabetes health education implementing tools such as hyperlinked digitalised flip chart improves engagement with patients.
- Enhanced diabetes virtual clinic session can improve assessibility and increased communications with patients by providing regular follow-ups and support without requiring physical clinic visits.
- Regular case-based discussion session for Medical Officers with Family Medicine Specialist enhance their knowledges while applying guidelines to real-patient scenario.
- In summary, integrating health education, technological innovations, and ongoing professional development appears to significantly contribute to better diabetes management and patient outcomes.

8 NEXT STEPS

Next step involves scaling up the intervention by extending the use of hyperlinked digitalised flip chart, enhanced diabetic virtual clinics to all clinics in Kulim District. This strategy not only promises to enhance diabetes management but also aligns with the broader trend towards leveraging technology for improved healthcare delivery.

9 ACKNOWLEDGEMENT

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