

# TO IMPROVE THE PROPORTION OF APPROPRIATE REFERRALS TO THE PACE-CVM ROUND

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## Mission Statement

To improve the proportion of appropriate referrals to the combined PACE-CVM Round, from 30% to 100% over a period of 6 months.

## Team Members

	Name	Designation	Department
Leaders	Dr Flora Yuan	Consultant Director, PACE	Anaesthesiology, Intensive Care & Pain Medicine (AICPM)
	Dr Chia Yew Woon	Consultant Director, CICU	Cardiology
Members	Dr Kwan Kim Meng	Senior Consultant	AICPM
	Dr Huang Wenjie	Consultant	Cardiology
	Dr Jane Chan	Resident Physician	AICPM
	Kitty Ho Pui Sim	Nurse Manager	AICPM
	Loh Choy Ling	Staff Nurse	AICPM
Sponsors	Adj A/Prof See Jee Jian	Head of Department	AICPM
	Adj A/Prof David Foo	Head of Department	Cardiology
Facilitator	Adj A/Prof Tan Hui Ling	ACMB (CQ&A)	AICPM

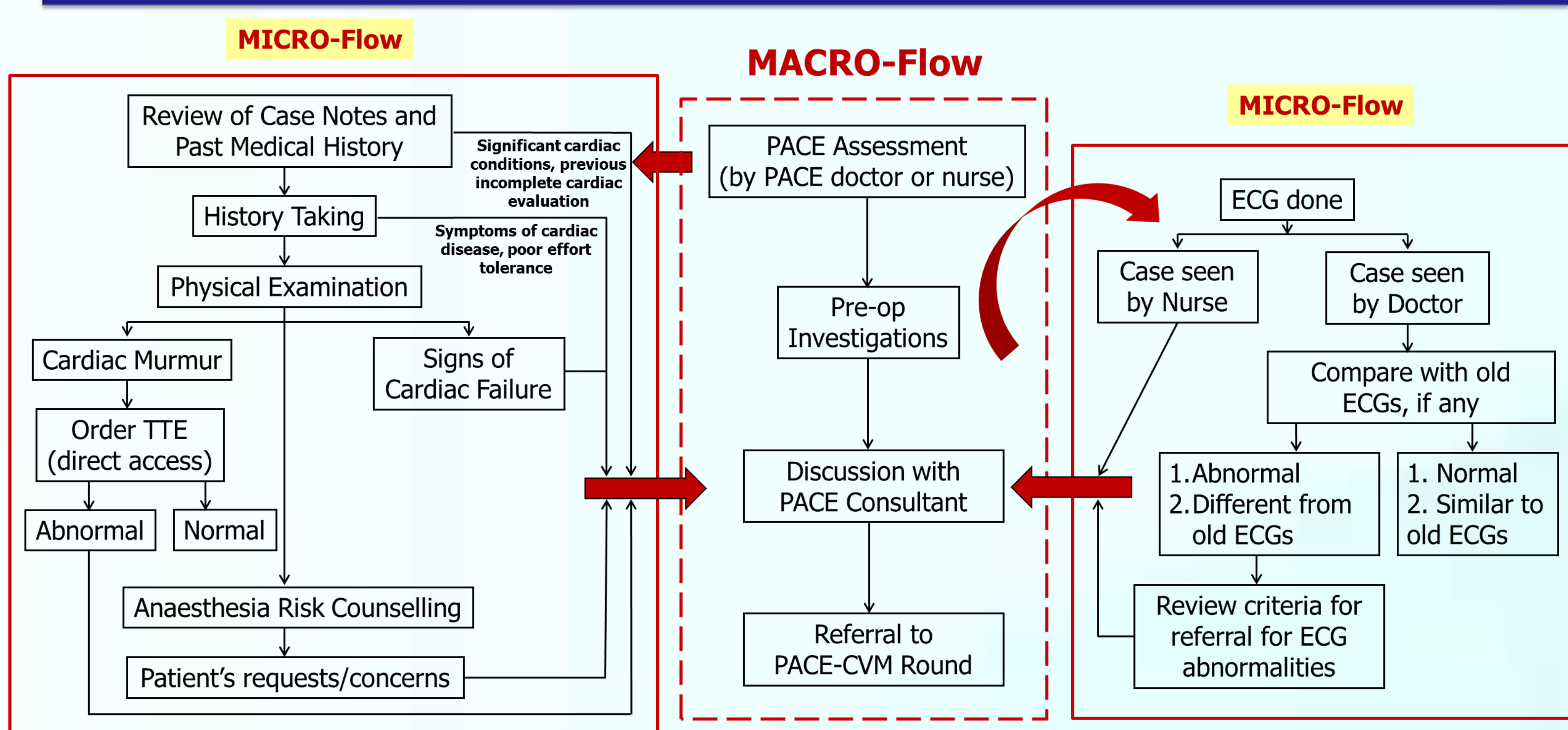
## Evidence for a Problem Worth Solving

- A significant percentage of patients referred to the combined PACE-CVM Round for pre-operative evaluation did not require further investigation or optimisation, despite the presence of guidelines in the PACE clinic.
- This resulted in
  - unnecessary patient anxiety
  - wastage of resources
  - both patient and physician dis-satisfaction
- Pre-CPIP survey revealed that patients were very concerned (score 7/10) when informed that their condition(s) needed to be discussed at the PACE-CVM Round before listing for surgery.

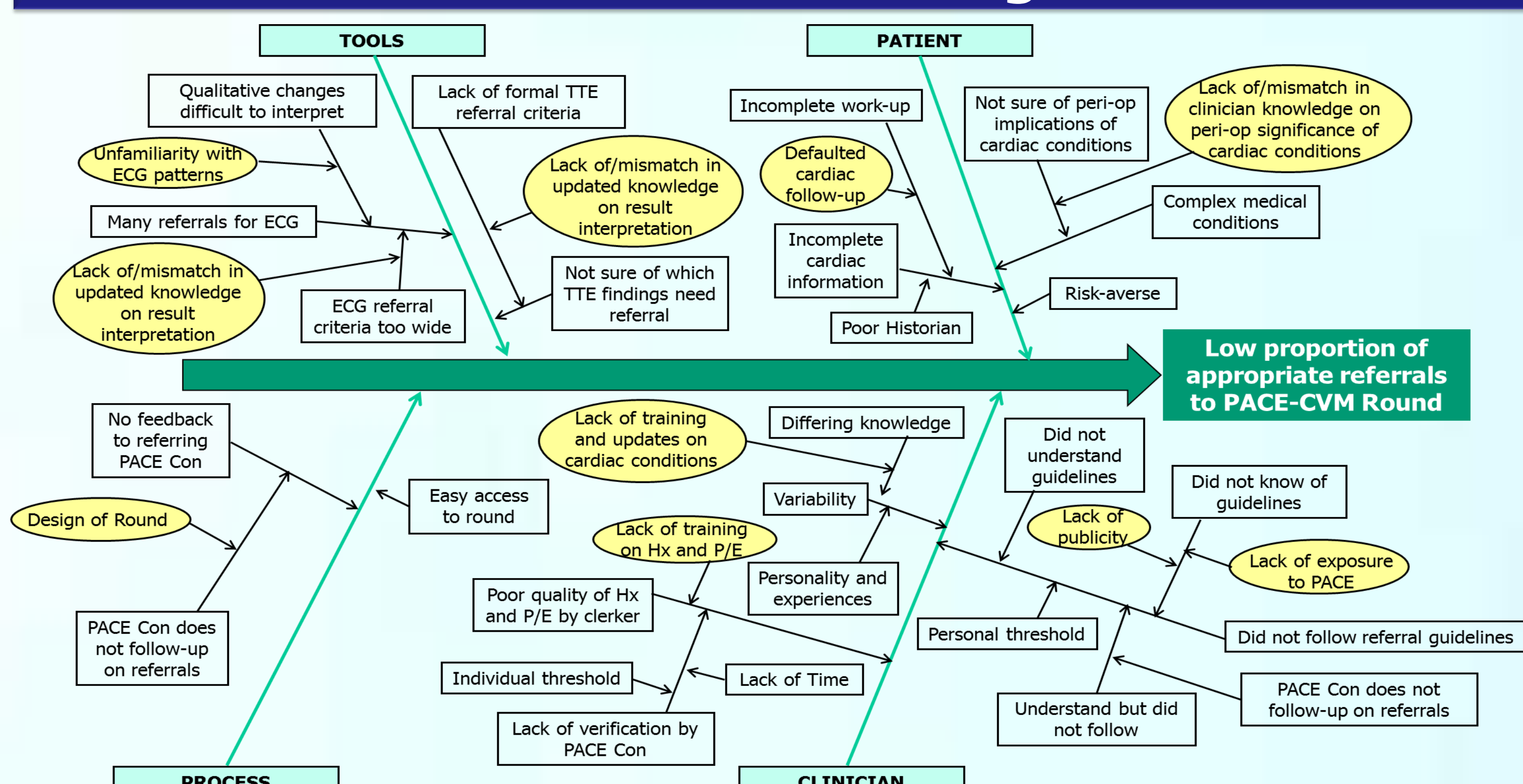
## Current Performance of a Process

Month	Total number of referrals to the combined PACE-CVM Round	Number of referrals that needed further investigation or optimisation (%)
Jan 2016	31	7 (23%)
Feb 2016	25	4 (16%)
Mar 2016	20	2 (10%)
Apr 2016	28	6 (21%)
May 2016	17	7 (41%)

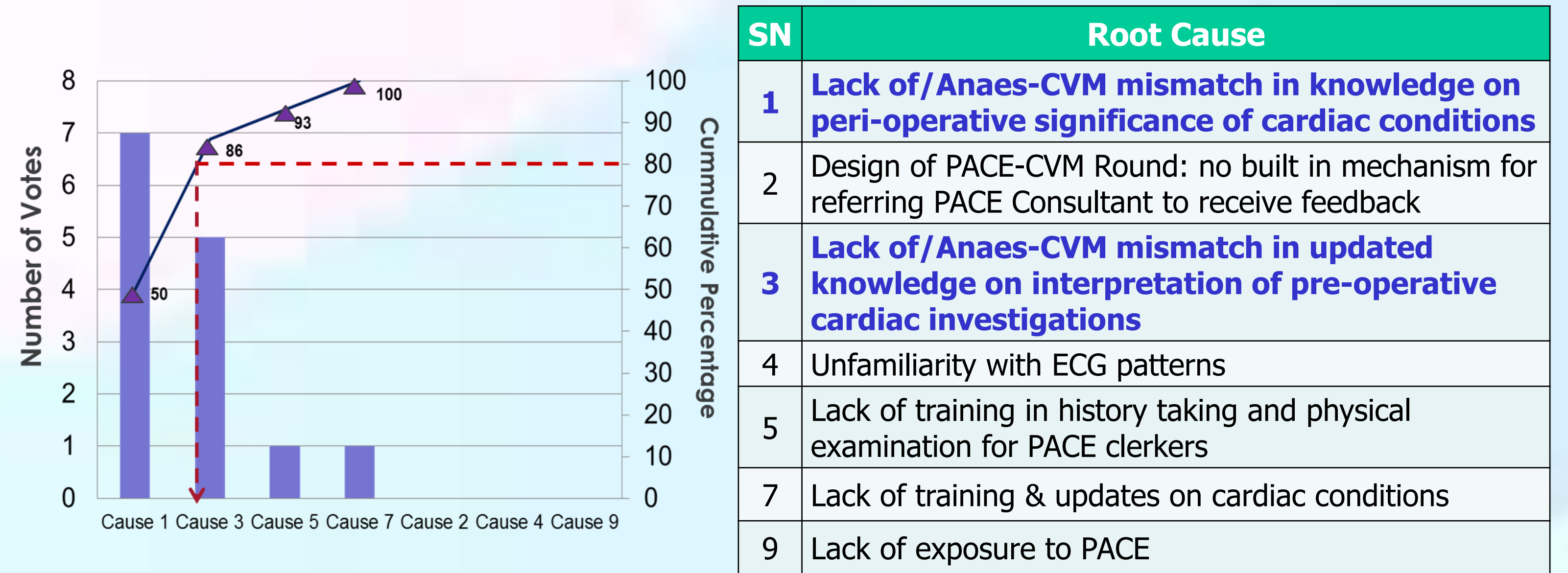
## Flow Chart of Process



## Cause and Effect Diagram



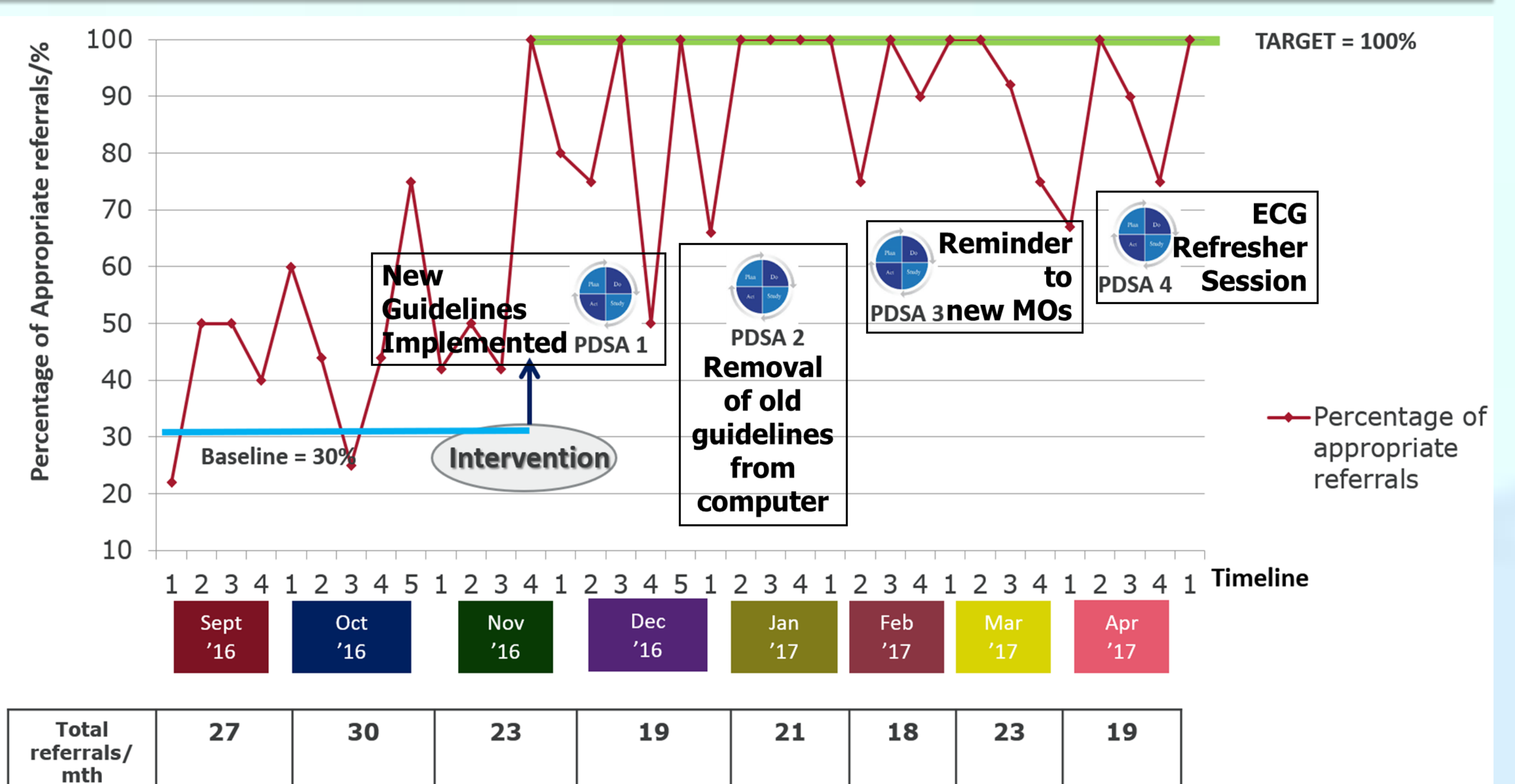
## Pareto Chart



## Implementation

Cause/Problem	Intervention	Date of Implementation
Lack of/Anaes-CVM mismatch in knowledge on peri-operative significance of cardiac conditions	1. Formulation and implementation of updated guidelines on peri-operative significance of important cardiac conditions <ul style="list-style-type: none"> <li>Ischemic Heart Disease</li> <li>Heart Failure</li> <li>Arrhythmias</li> <li>Valvular Heart Disease</li> <li>Hypertension</li> </ul>	21 Nov 2016 Interventions (1), (2), (3) consolidated into a set of Cardiology Referral Guidelines, effective in PACE
Lack of/Anaes-CVM mismatch in knowledge on interpretation of pre-operative cardiac investigations	2. Formulation and implementation of risk stratification tables for common cardiac investigation results <ul style="list-style-type: none"> <li>ECGs</li> <li>Echocardiograms</li> <li>Cardiac stress tests</li> <li>Coronary calcium score</li> <li>Cardiac CT</li> </ul>	
	3. Consolidated workflow/algorithm to guide decision for pre- vs post-operative cardiology referral	

## Results



## Cost Savings

Process per Referral	Mean time taken (mins)	Weighted average cost per min (\$)	Cost Savings
Doctor to discuss case with PACE Consultant, write referral memo and place in file	16	\$1.41	\$22.56
Cardiologist and PACE Consultant to review case, with accompanying nurse	5	Doctors: \$4.87 x 2 Nurse: \$1.57	\$56.55
PACE Consultant to follow-up on recommendations	7	\$4.87	\$34.09
<b>Total savings</b>	<b>28</b>		<b>\$113.20</b>

## Problems Encountered

- Need for regular reminders and road shows especially during MOPEX change over period.
- Concern about same day cancellation by attending OT Anaesthetists for perceived insufficient pre-operative cardiac assessment → none reported so far.

## Strategies to Sustain

- Continual audit and tracking of cases
- Continual education and supervision of junior doctors
- Build in mechanism to feedback to referring clinician
- Regular communication between Anaesthesiology and Cardiology