



Singapore
General Hospital
SingHealth

QI PROJECT



**To Reduce the Waiting
Time at Ultrasound Suite,
Department of Diagnostic
Radiology (DDR)**

AIM AND OBJECTIVES

Aim

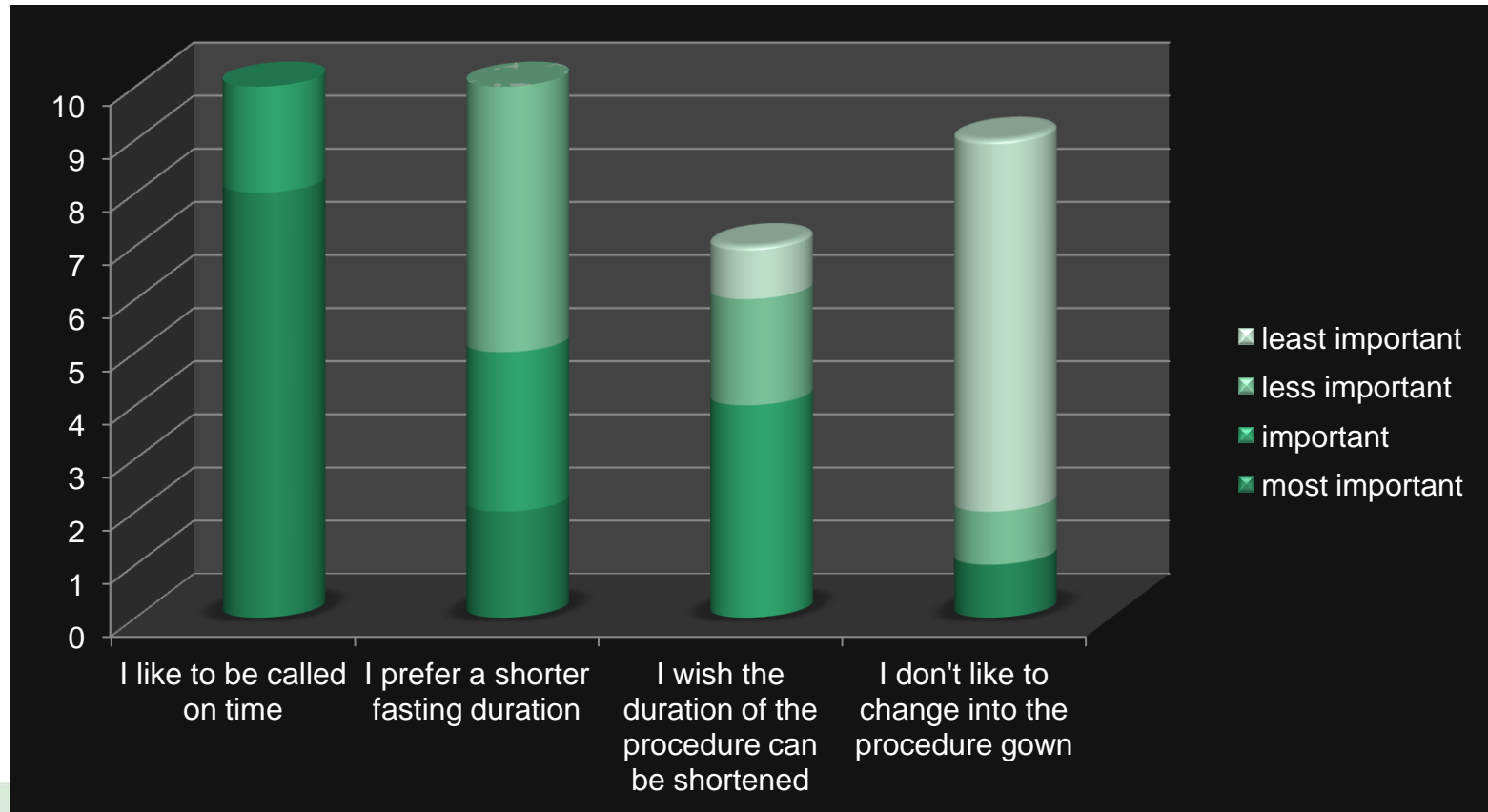
- a) To find solutions to overcome the long waiting time

Objectives

- a) To reduce the time patients had to wait before they were called into the procedure rooms
- b) To improve existing workflow
- c) To deliver quality care to our patients

TARGET SETTING

Result of written survey identified “I like to be called in on time” as the most important criterion to the patients when they visited the ultrasound suite



Definition of waiting time:

The time the patient is called into the procedure room minus the given appointment time

The average waiting time was found to be
51.6 minutes

Ten patients were picked at random and asked what they considered to be the most acceptable waiting time

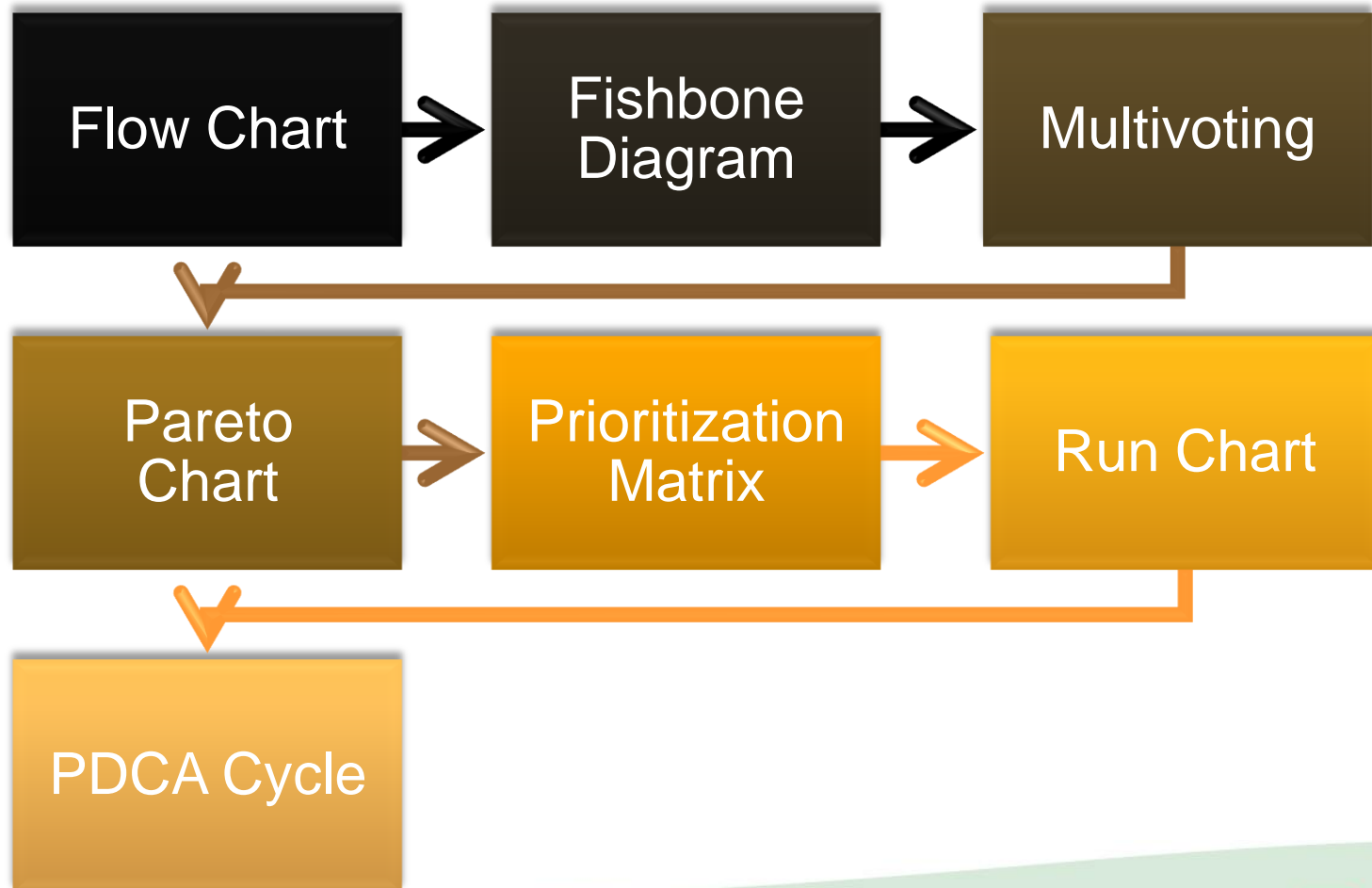
All responded **30 minutes** as the most acceptable waiting time

MISSION STATEMENT

All outpatients for ultrasound scan at the Department of Diagnostic Radiology should not wait more than 30 minutes from their time of appointment within the next nine months

PROJECT METHODOLOGY & ANALYSIS

QI TOOLS



Flow Chart - Showed a break down of the workflow processes

External Task (Reception)

PSC rescheduled patient to another date

PSC checked with sonographer to proceed or rescheduled patient

No

Yes

Patient arrived at DDR US reception

Patient placed request form on tray

HCA confirmed patient's appointment time

HCA passed request form to PSC for registration

PSC called patient, checked patient's preparation

Yes

PSC registered patient and issued Q number

HCA instructed patient to change, and waited to be called into the procedure room

HCA brought request form into the US work area

Sonographer cleaned room and machine

Sonographer placed comment sheet in the reporting room

Sonographer wrote down observations on comment sheet

Sonographer sent the patient off

No

Was verification necessary?

Yes

Sonographer performed and completed scan

Sonographer confirmed patient identity, assisted patient on exam couch

Sonographer pressed Q number, and called patient into procedure room

Sonographer picked up request form, read history from IMS

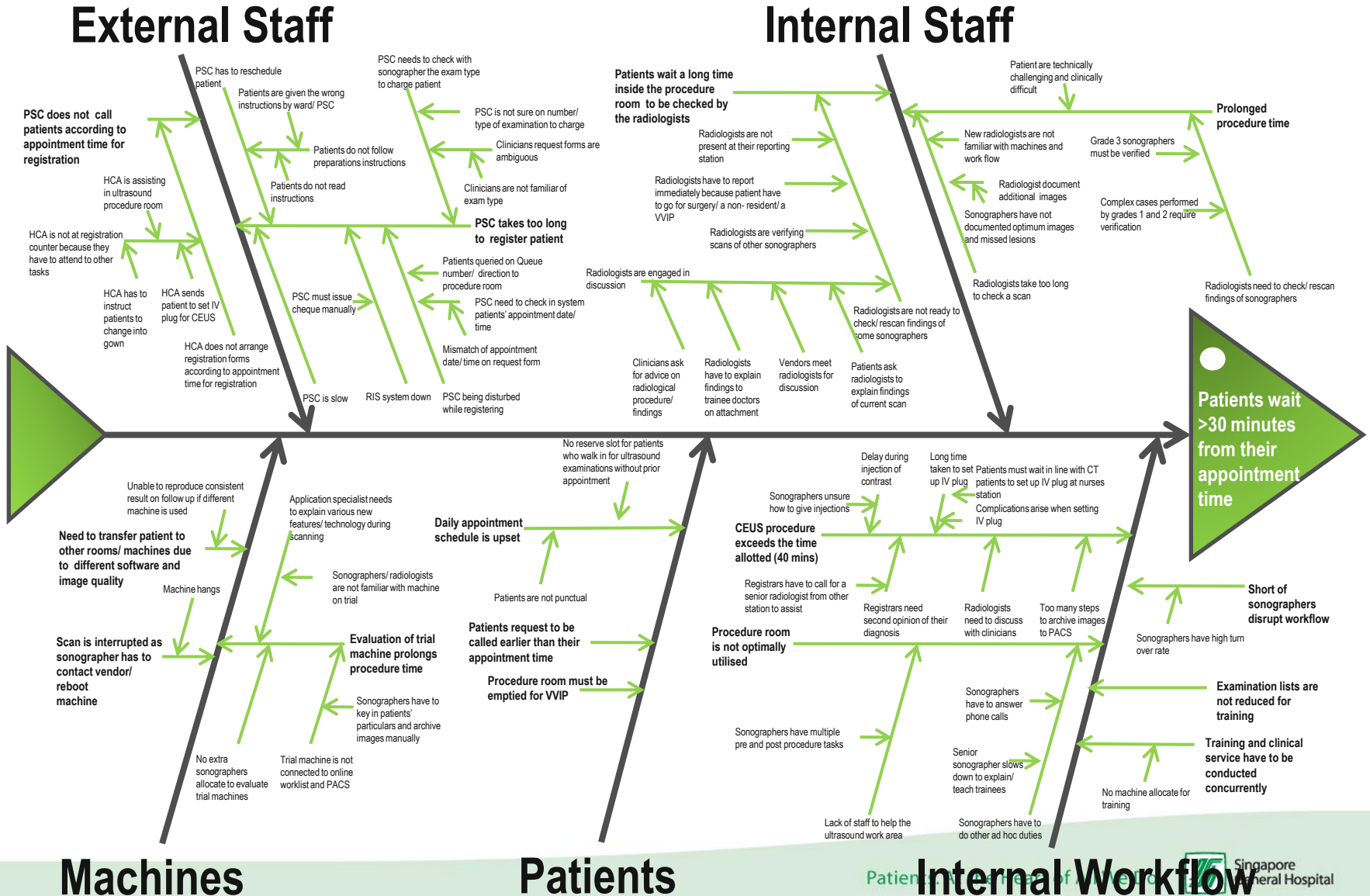
Internal Task (Ultrasound procedure & reporting)

Radiologist scanned patient

Radiologist reviewed history and images

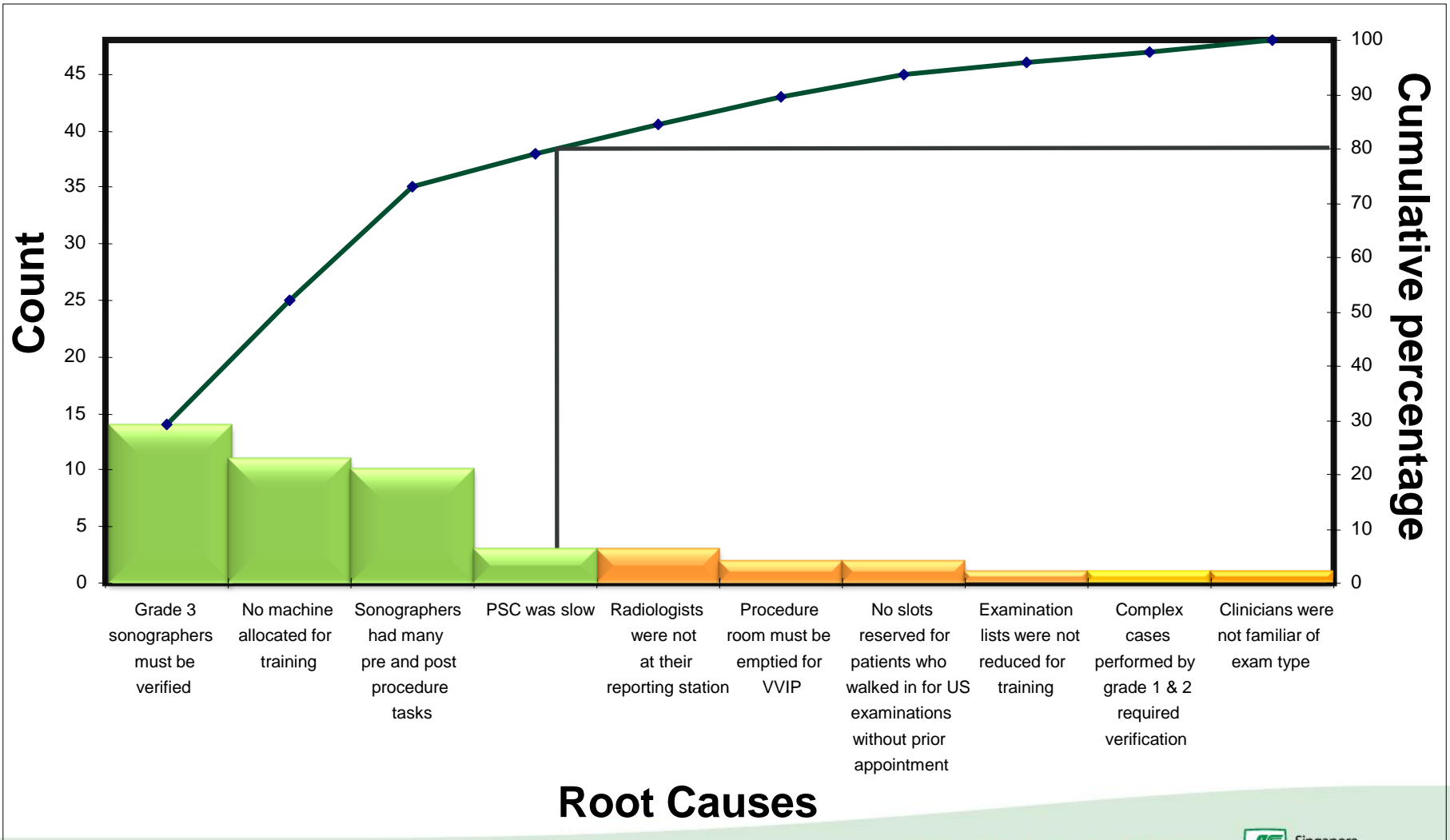
Sonographer discussed findings with radiologists

Fishbone Diagram – There were 44 root causes (the smallest bones) for long waiting time



Multivoting - Reduced the 44 root causes to 10

Pareto Chart – Four vital root causes were identified for solving



Root Causes

Sonographers – level of competency

Grade 1- Worked independently
Able to decide if sonographic findings required verification by the radiologists
Trained radiographers and medical officers in ultrasound

Grade 2- Sonographic findings were verified at the discretion of the radiologists

Grade 3- All sonographic findings were verified by the radiologists

Why must vital root cause 1 be solved?

Root cause 1
**Grade 3
sonographers
(findings)
must be
verified**



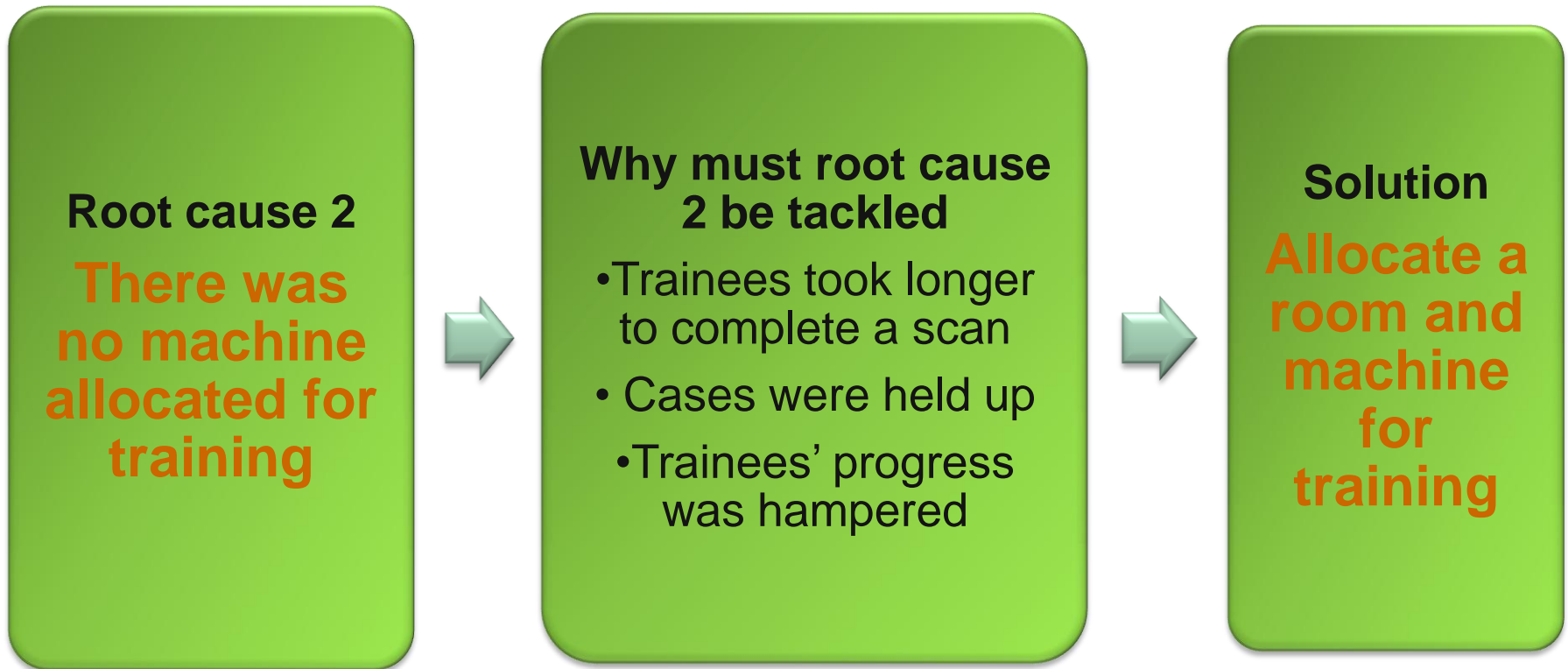
Why must root cause 1 be solved

- Radiologists were busy with other tasks and could not verify findings immediately
- Radiologists had to read patients' clinical history and radiological images and rescanned the patients, which resulted in duplication of tasks



Solution
**Upgrade
grade 3
sonographers
to grade 1**

Why must vital root cause 2 be solved?



Why must vital root cause 3 be solved?

Root cause 3
**Sonographers
had many pre
and post
procedure
tasks**



Why must root
cause 3 be
solved

- Procedure room
time was not
optimised (room
was left empty)

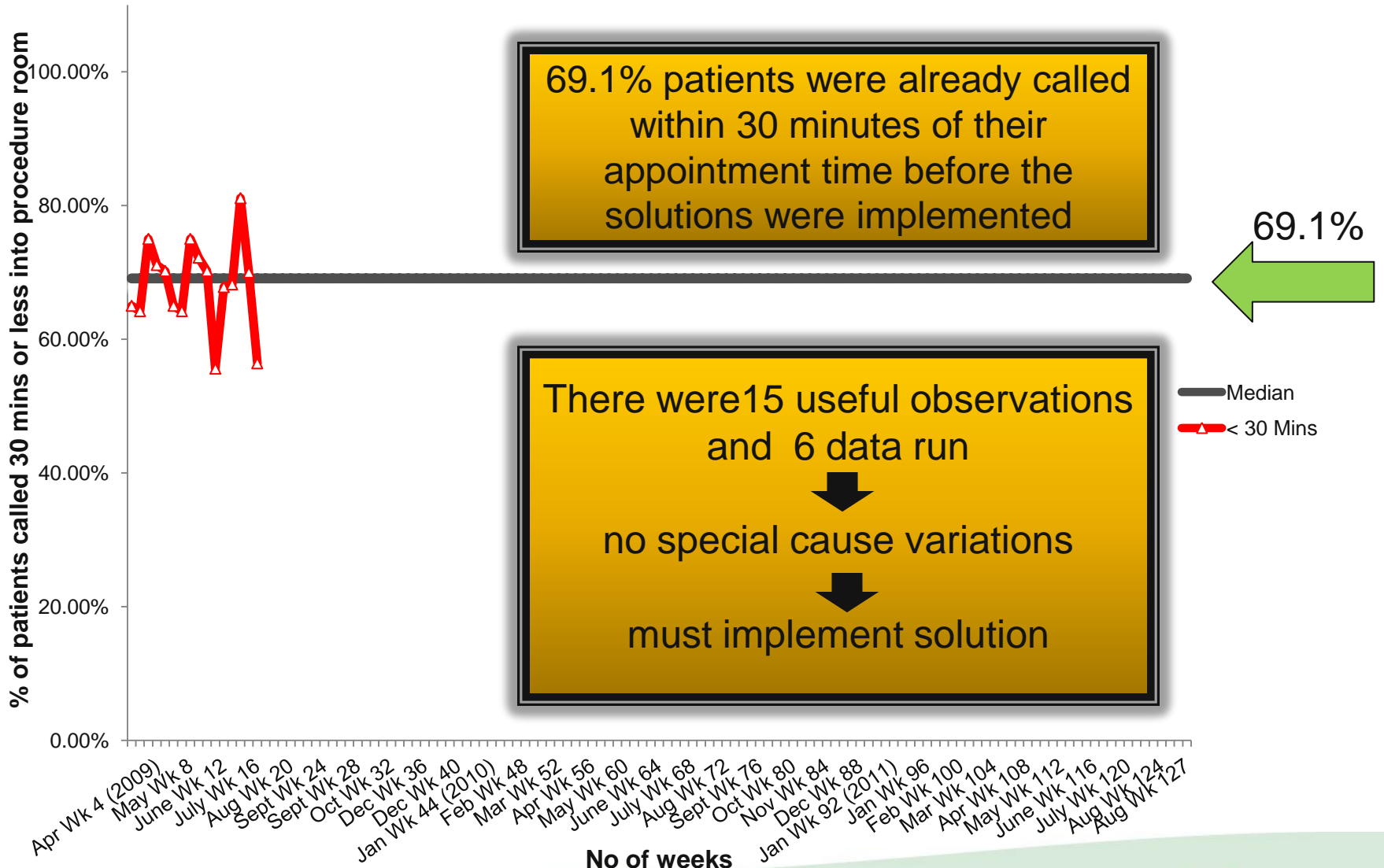


Solution
**Introduced
1.5
sonographer
manpower**

Prioritization Matrix – Identified the most practical solution(s) to be implemented for each vital root cause

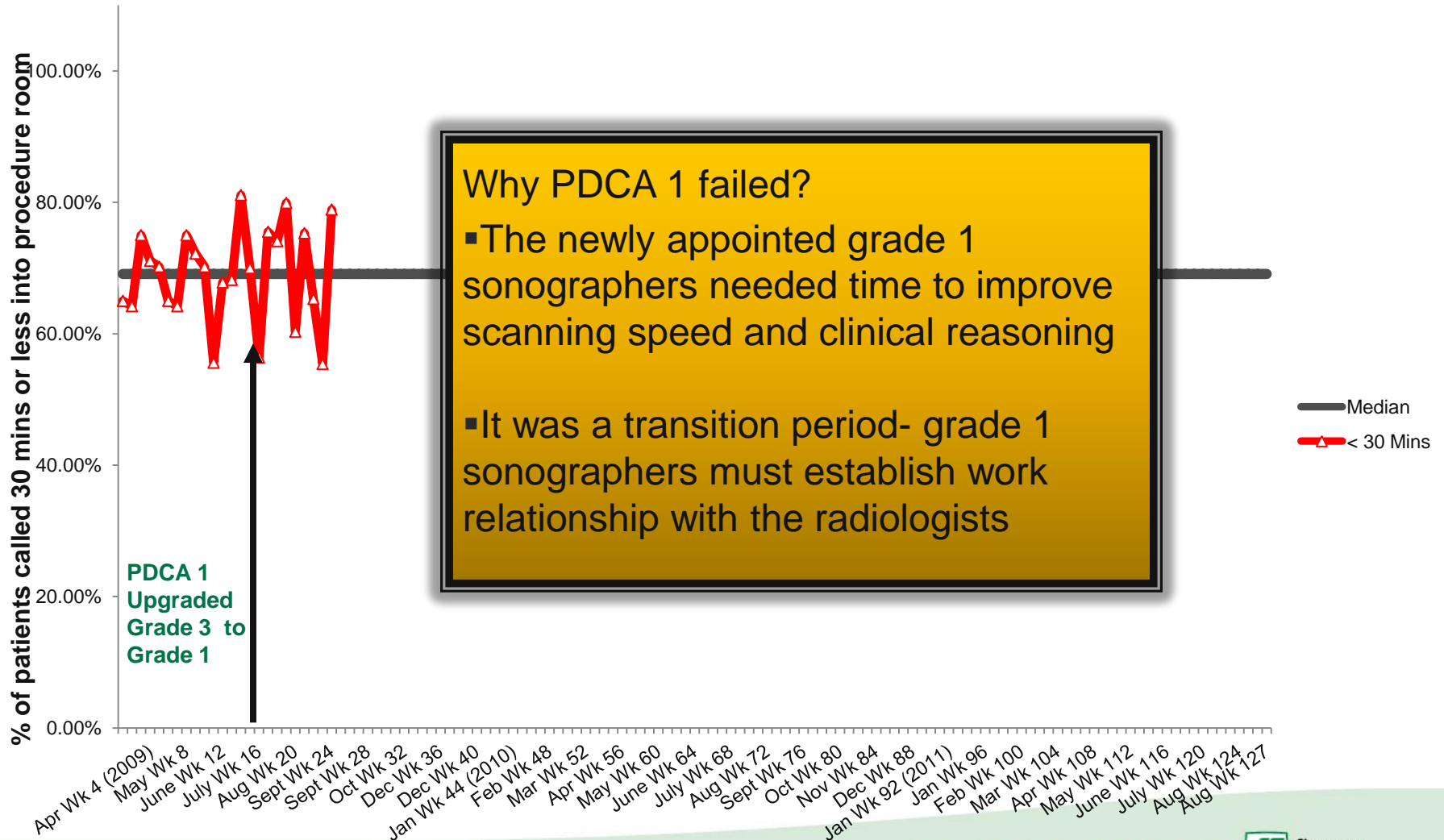
| Problem | Root causes | Proposed solutions | Criteria to consider before implementing solution | | | Was solution practical? |
|---|---|--|---|-----------|-------------------|-------------------------|
| | | | Effective | Save time | Easy to implement | |
| Patients waited >30 minutes from their appointment time | 1. Grade 3 sonographers (findings) must be verified | To upgrade grade3 to grade1 | 1 | 1 | 1 | Yes |
| | | Senior sonographers to assist in verifying findings of grade 3 | 1 | 1 | 3 | No |
| | | Do not roster >2 grade3 per day | 1 | 3 | 3 | No |
| | 2. No machine allocated for training | To provide a room and machine for training | 1 | 1 | 1 | Yes |
| | | To conduct training after work using phantom/ volunteers | 3 | 2 | 2 | No |
| | 3. Sonographers had many pre and post procedure tasks | To send trainees to other learning centers | 2 | 3 | 3 | No |
| | | To recruit experienced sonographers | 3 | 1 | 2 | No |
| | | To introduce 1.5 sonographer manpower | 1 | 1 | 1 | Yes |
| | 4. PSC was slow | To add another HCA to assist in the external workflow | 1 | 2 | 1 | No |
| | | To improve training methods | 1 | 2 | 1 | No |

Run Chart – To monitor the progress of the solutions that were implemented



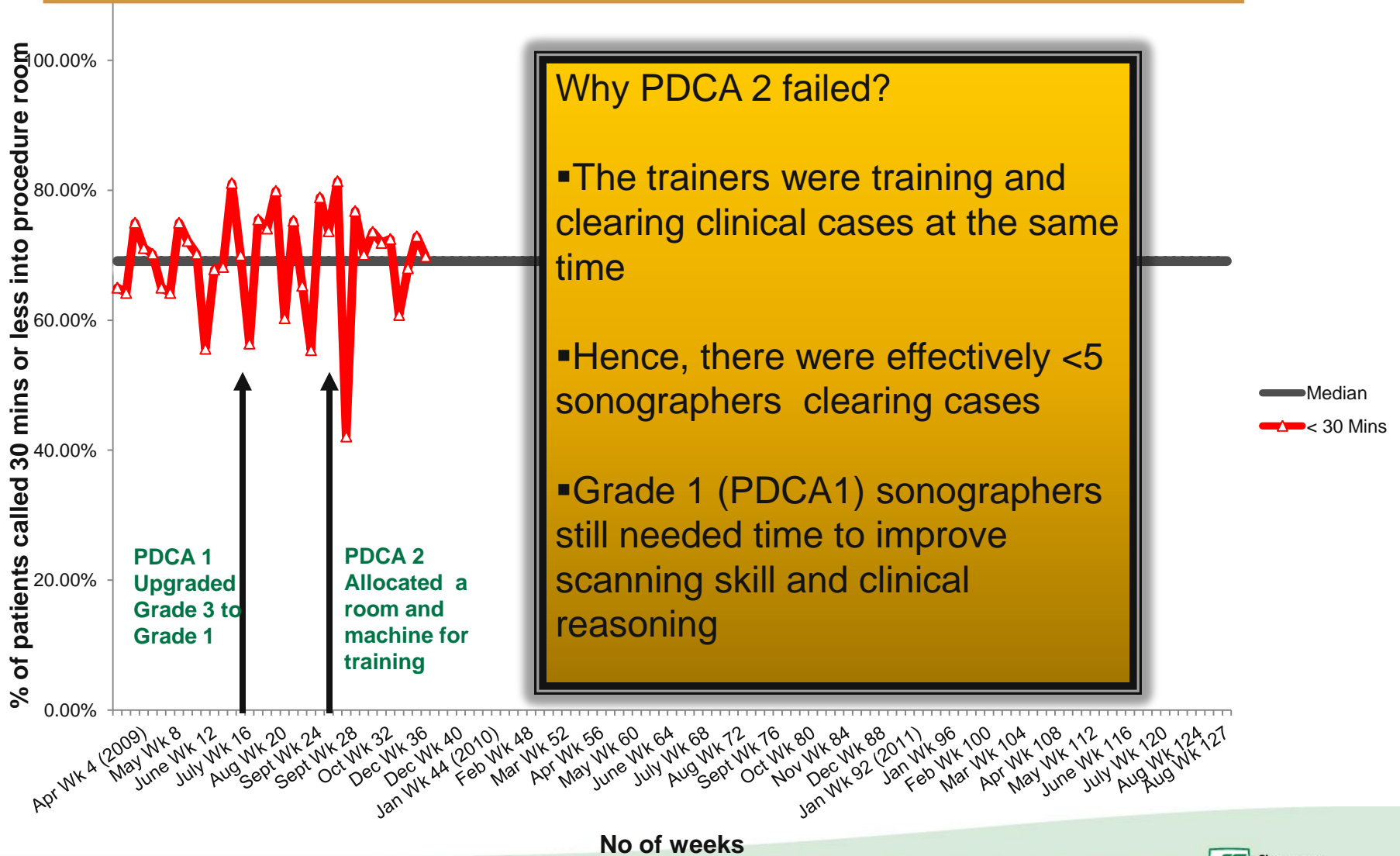
PDCA Cycle 1 – (6th July- 6th September 2009)

Upgraded grade 3 sonographers to grade 1



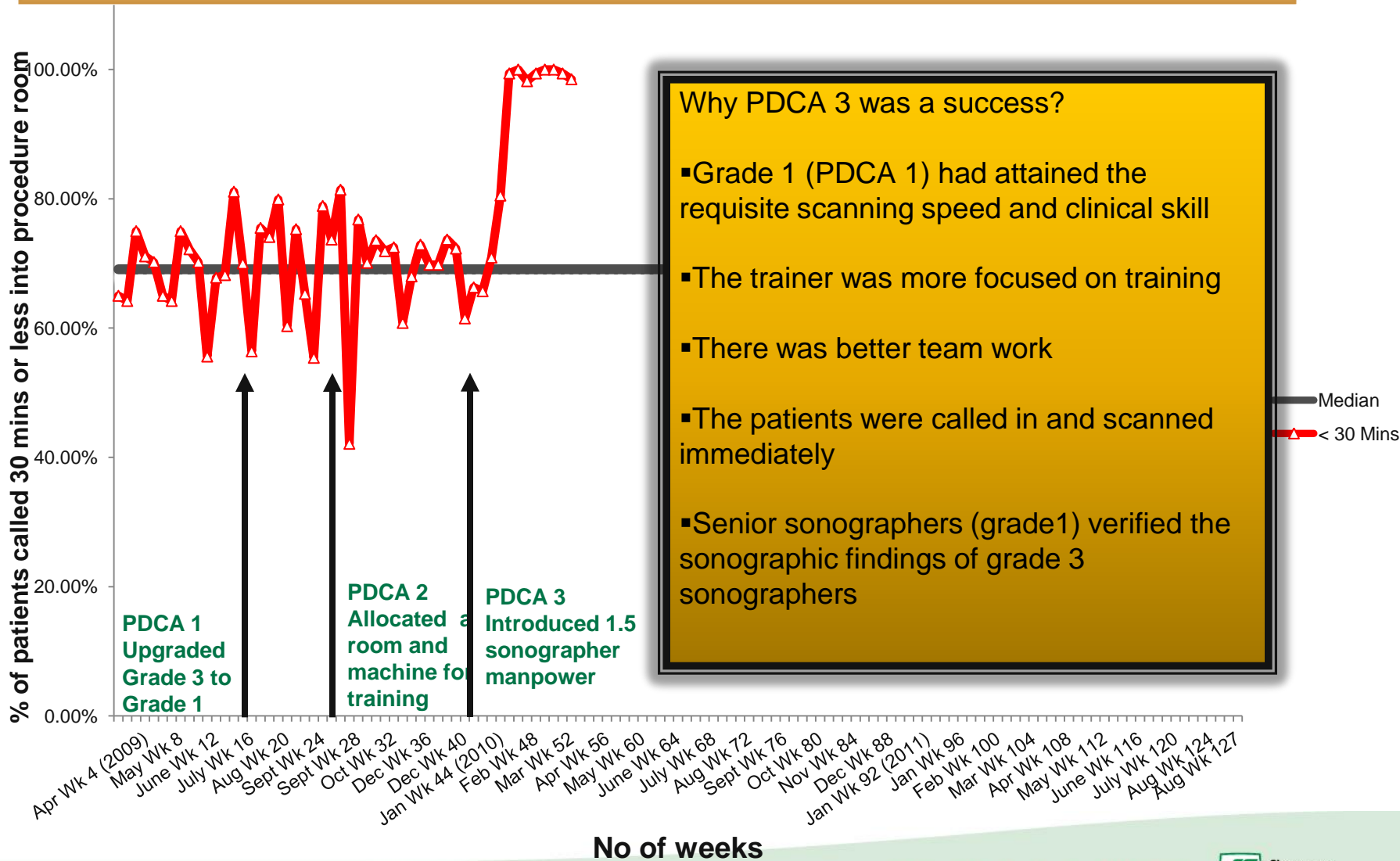
PDCA Cycle 2 – (7th September- 6th December 2009)

Allocated a room and machine for training

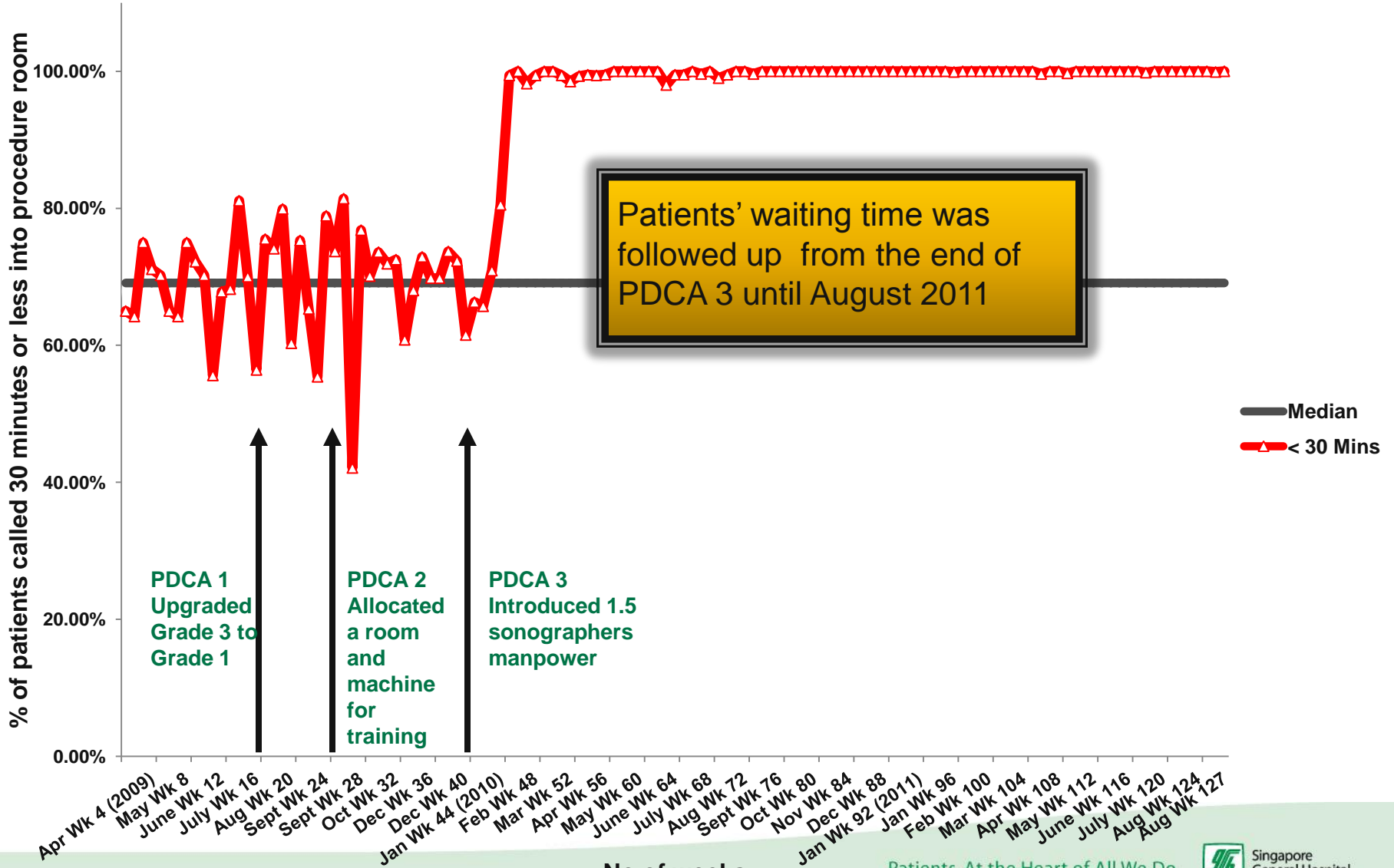


PDCA Cycle 2 – (7th December 2009 - 7th March 2010)

Introduced 1.5 sonographers manpower



SUSTAINABILITY



No of weeks

Patients. At the Heart of All We Do.

PROJECT ACHIEVEMENTS

To the patients

- ✓ All patients were called within 30 minutes of their appointment times
- ✓ The waiting area was less crowded, thus alleviating stress level

To the workflow

- ✓ Sonographers' pre and post tasks were performed outside the designated exam slots. This maximised the patients' turnover per room
- ✓ The trainers were more focused on training resulting in less disruption to training
- ✓ Senior sonographers assisted the radiologists in verifying the sonographic findings of grade 3. Less disruption to completion of reports

To the staff

- ✓ Able to complete work on time
- ✓ All were less stressed
- ✓ Trainees were better able to achieve outcome upon completion of training
- ✓ Role extension for senior sonographers resulted in personal and professional satisfaction
- ✓ Less work related musculoskeletal strains

To the department and organisation

- ✓ Less turn-over rate among sonographers
- ✓ Able to accept more walk-in cases
- ✓ More efficient clinical management of patients



Thank you



R Abu Bakar, C Ooi, N Gazali, P Mohan, F Deng, L Chan