

Self or caregiver administration of intravenous antibiotic infusion in Outpatient Parenteral Antibiotic Therapy (OPAT) at Tan Tock Seng Hospital

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Mission Statement

Tan Tock Seng is the first hospital that offers Outpatient Parenteral Antibiotic Therapy (OPAT) clinic in Singapore in 2001. The ability to manage patients in the community setting reduces pressure on hospital beds utilization, reduces the risk of developing nosocomial infections, reduces the costs of inpatient care whilst maintaining patient autonomy has led to increasing interest in OPAT services.

In order to facilitate more medically stable patients to be discharged to outpatient for intravenous antibiotic, our team would like to empower patients/caregivers to take part of the care and at the same time it is more convenient for them. The goal is to have 10% more caregiver OPAT patients per year.

Team Members

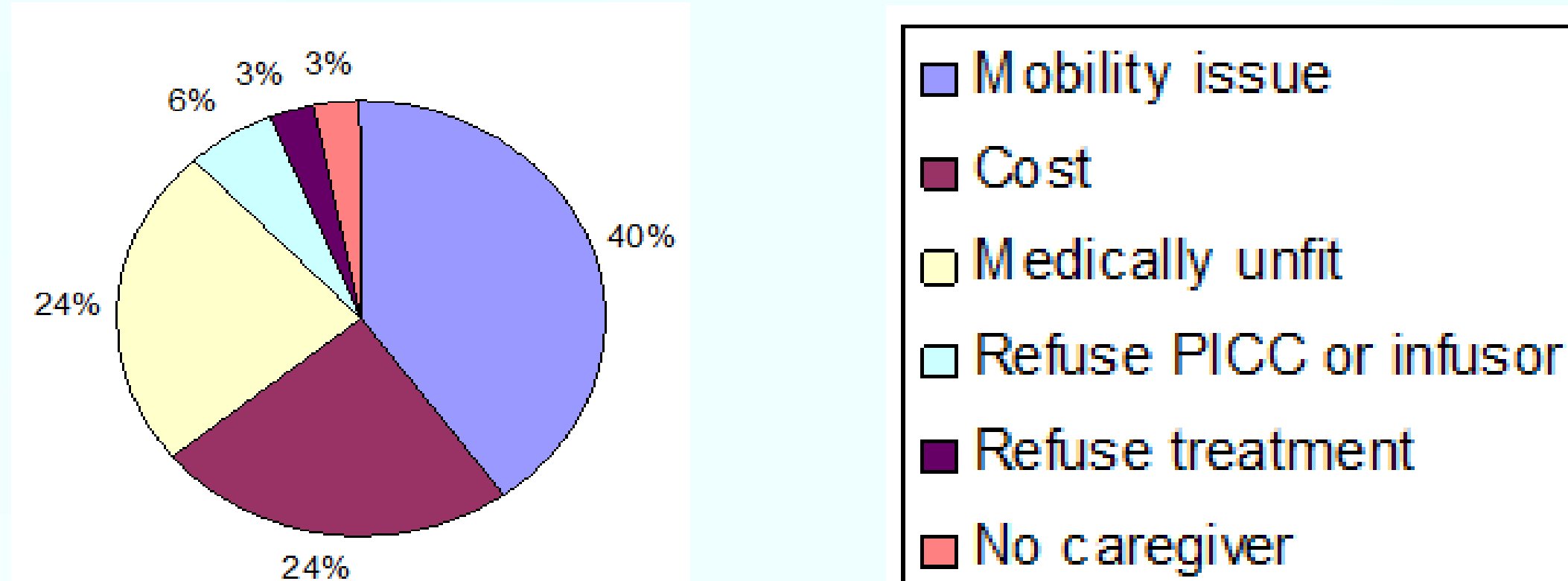
	Name	Designation	Department
Team Leader	Zhong Lihua	Nurse Manager	OPAT Clinic
	David Lye	Senior Consultant	NCID
	Lim Siew Geok	Principal Nurse Educator	Nursing Service
	Wang Ruijuan	Senior staff nurse	OPAT Clinic
	Soh Yee Man	Senior staff nurse	OPAT Clinic
	Team members	Jesica Kong	Staff nurse
Sponsor	Monica Chan	Senior Consultant	NCID

Evidence for a Problem Worth Solving

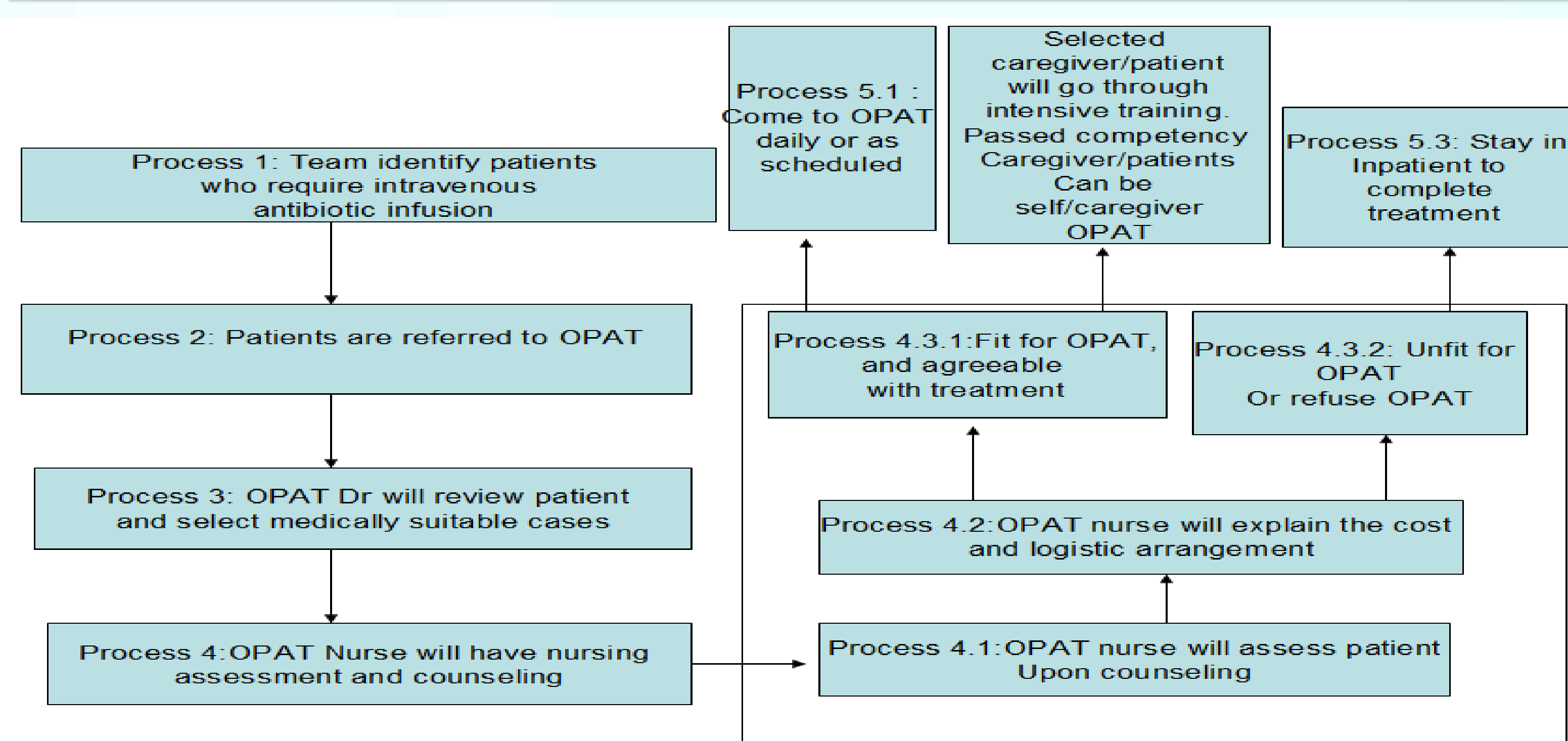
In 2008, from weekly OPAT screening of patients who have been on intravenous antibiotic for more than a week, the team noticed that 39 out of 43 patients screened were found not suitable for OPAT based on mobility and other criteria. In addition, one the main reasons (40%) for failed referrals was because of perceived inconvenience and expensive cost of transportation of daily or alternate day commuting from home to OPAT in 2008.

Current Performance of a Process

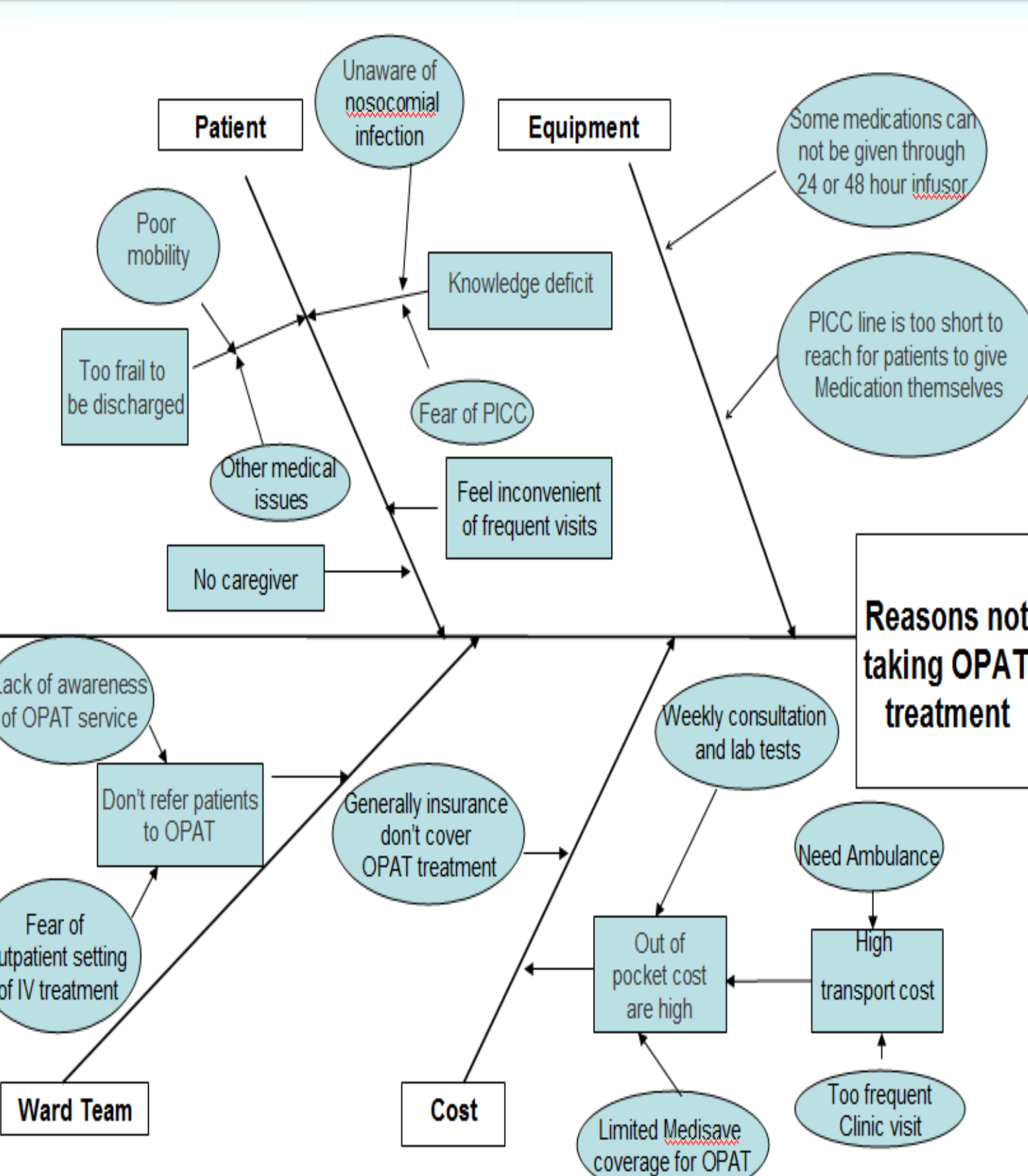
Reasons for failed referrals in 2007



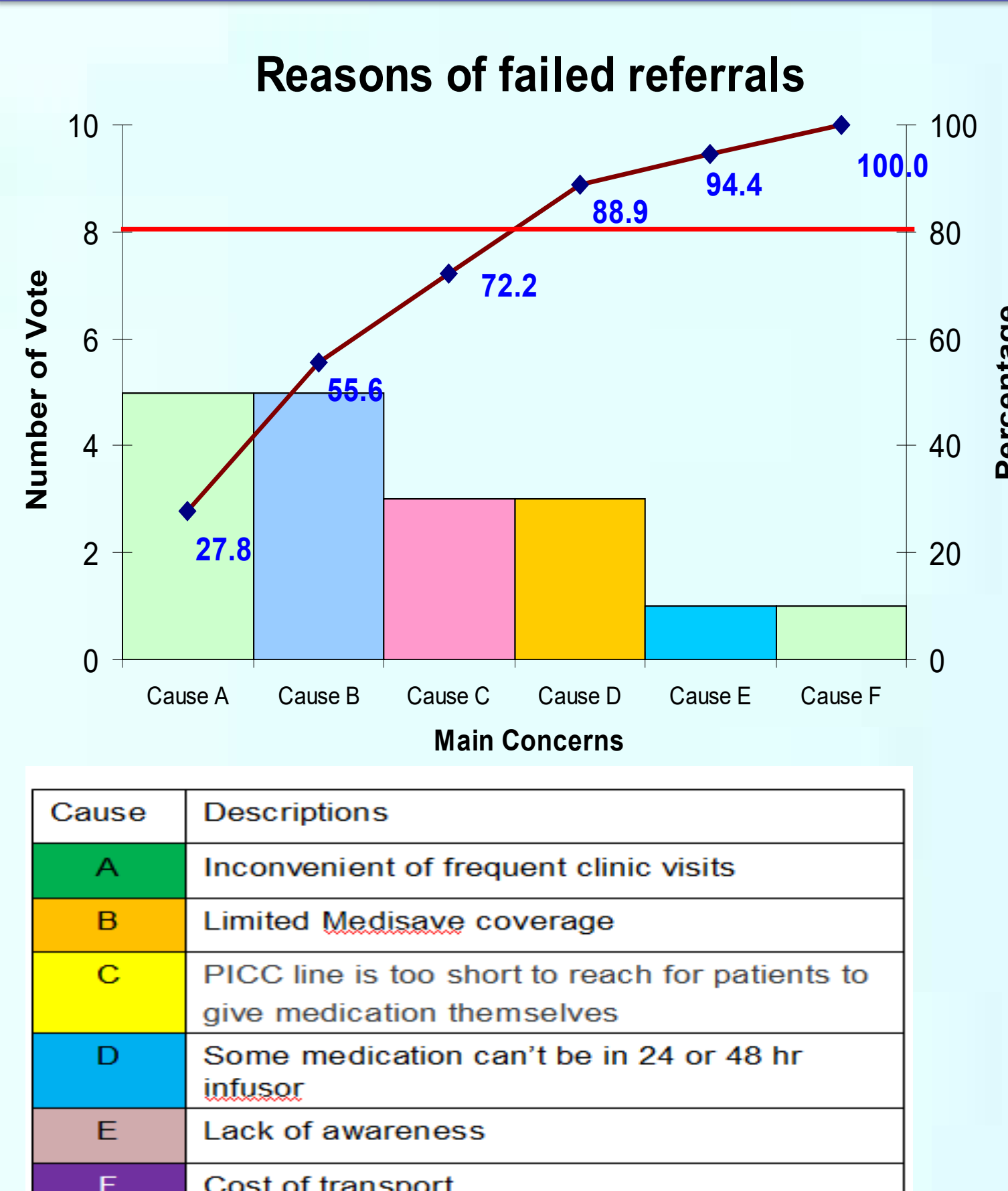
Flow Chart of Process



Cause and Effect Diagram

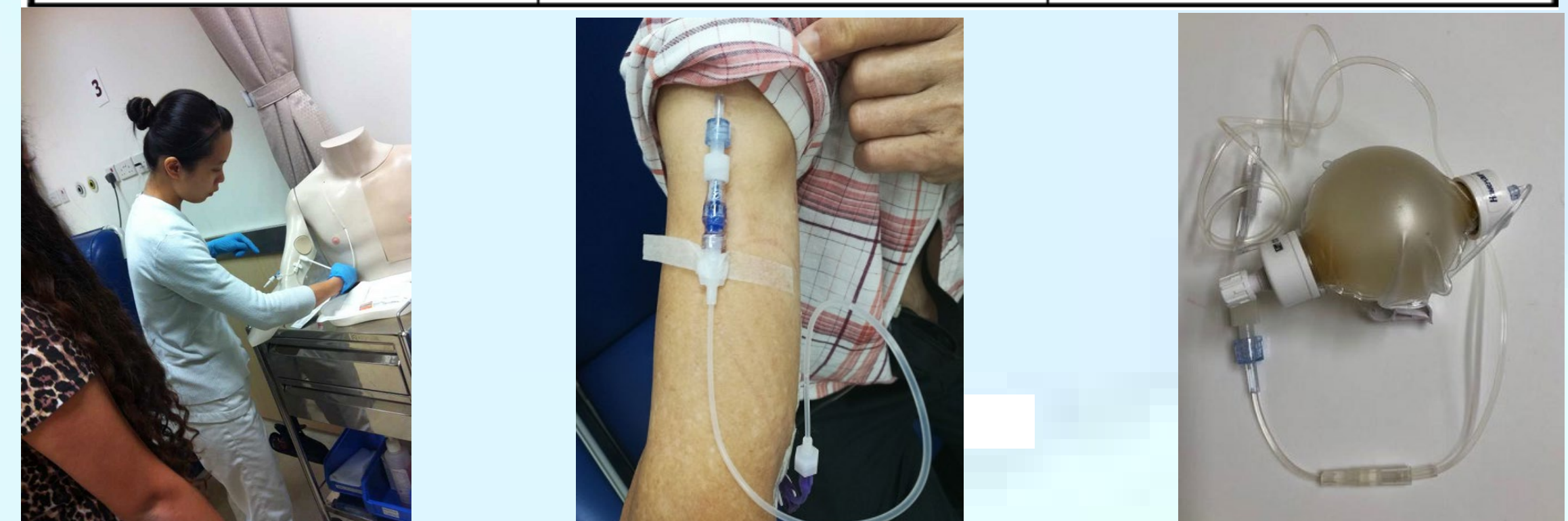


Pareto Chart



Implementation

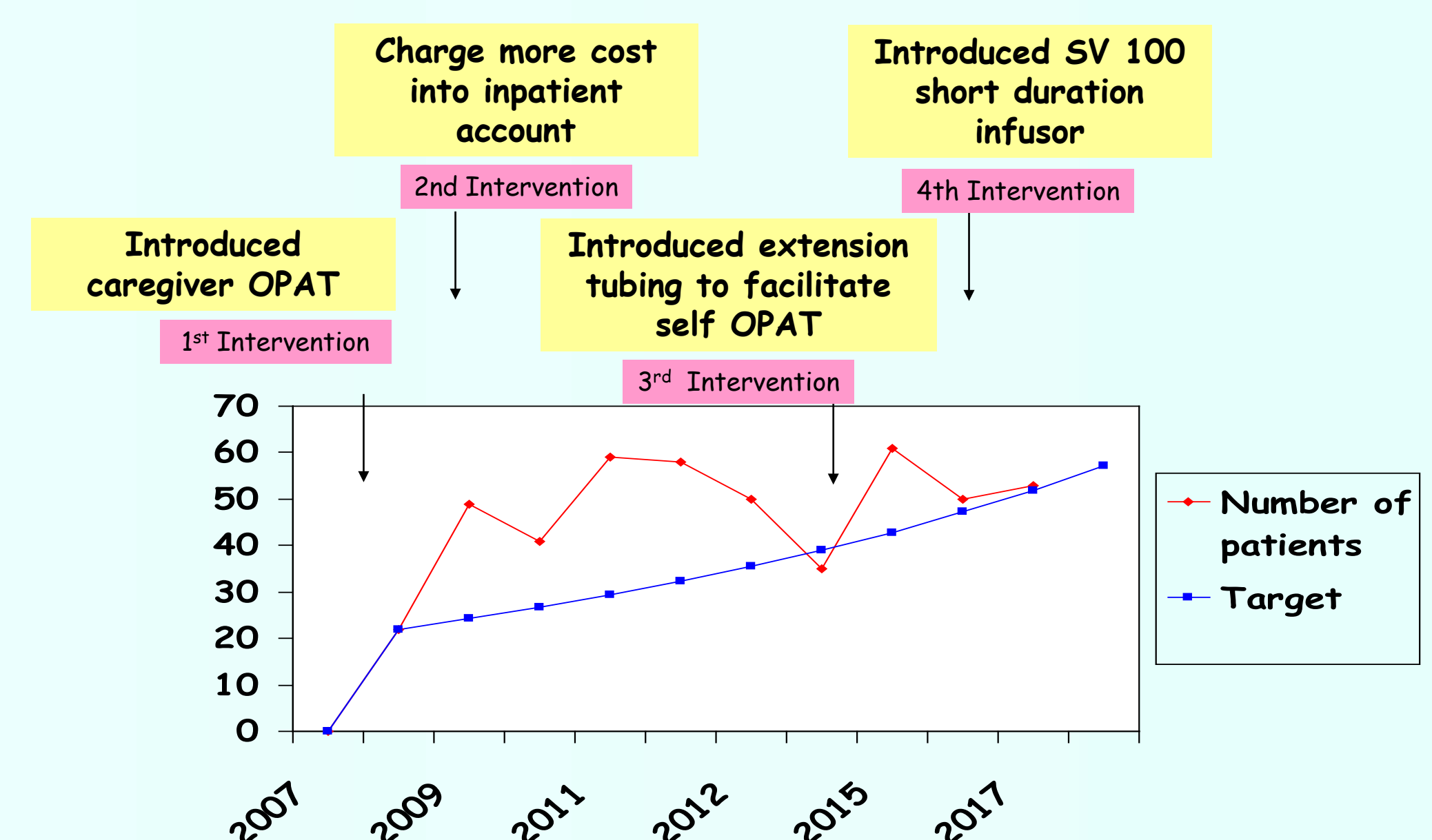
PROBLEM	INTERVENTION	DATE OF IMPLEMENTATION
Inconvenient of frequent clinic visits	Introduced caregiver OPAT	Year 2008
Limited Medisave coverage	Charged certain cost to inpatient	Year 2009
PICC line is too short to reach for patients to give medication themselves	Introduced extension tubing for self-administration of intravenous antibiotic	Year 2015
Some medication can't be in 24 or 48 hr infusor	Introduced SV100 short duration of insuor	Year 2016



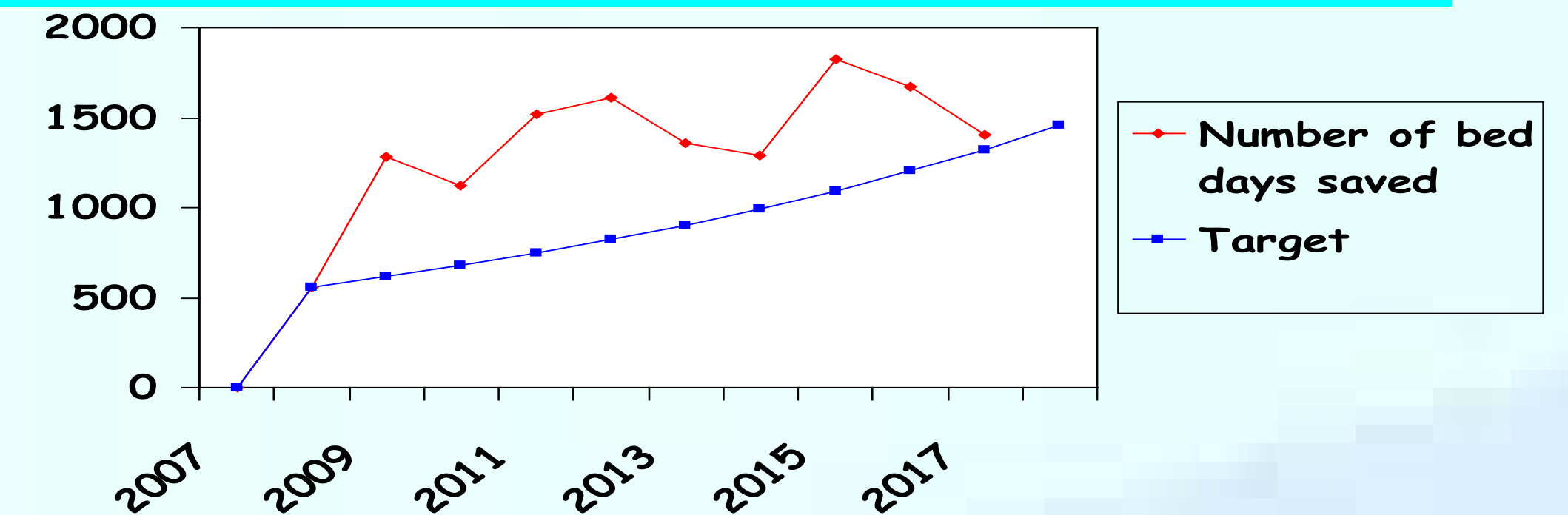
Results

There were 478 patients enrolled in self/caregiver OPAT from 2008 to 2016 resulting in 13633 bed days saved; median duration of OPAT treatment was 28 days. Readmission rate of self/caregiver OPAT was 13%, in comparison clinic OPAT was 10% and home OPAT was 18%. The main cause for re-admission was worsened co-morbidity. Line related complications occurred in 3/1000 catheter days, similar to clinic/home OPAT patients (3.5/1000). With self/caregiver OPAT service, the total number of bed days saved in OPAT increased over the years, from 3649 days in 2007 to 7630 in 2016, a 109% increment.

Number of self/caregiver OPAT patients per year



Number of bed days saved by self/caregiver OPAT per year



Cost Savings

Average bed days saved per year is 1363 days, average inpatient costs about \$1114 per day, OPAT self/caregiver OPAT service costs about \$150 per day, so average cost saving per year is approximately $(\$1114 - \$150) \times 1363 = \$1,313,932$. Comparing self/caregiver OPAT patients to clinic OPAT patients, the cost savings for patients would be transport fee and administration of antibiotic fee, which costs about \$60 per day, \$81,798 per year. In addition to cost savings for the patients and hospital, the time saved by OPAT nurses allows increased capacity to attend to clinic or home OPAT cases. For patients and/or family members, the time and inconvenience saved by avoiding daily travel to and from the clinic is substantial.

Problems Encountered

- Careful selection of caregiver and patients is very important. Language barrier for some caregivers and patients is an issue as many domestic helpers are unable to speak local languages. Training time may be long for some patients.
- Increased risk of infusor wastage as more infusors would be prepared per batch to reduce the number of clinic visits required for collection of infusors by self/caregiver OPAT patients.

Strategies to Sustain

- The OPAT team had created pamphlets with pictorial guide for caregivers. These pamphlets are updated when products are changed. OPAT team is in the process of developing an instructional video to better support this group of patients.
- The OPAT team has tried different schedules of preparing of infusors, then adopted the best method to reduce wastage, yet minimize clinic visit for collection.