



Singapore Healthcare Management 2018

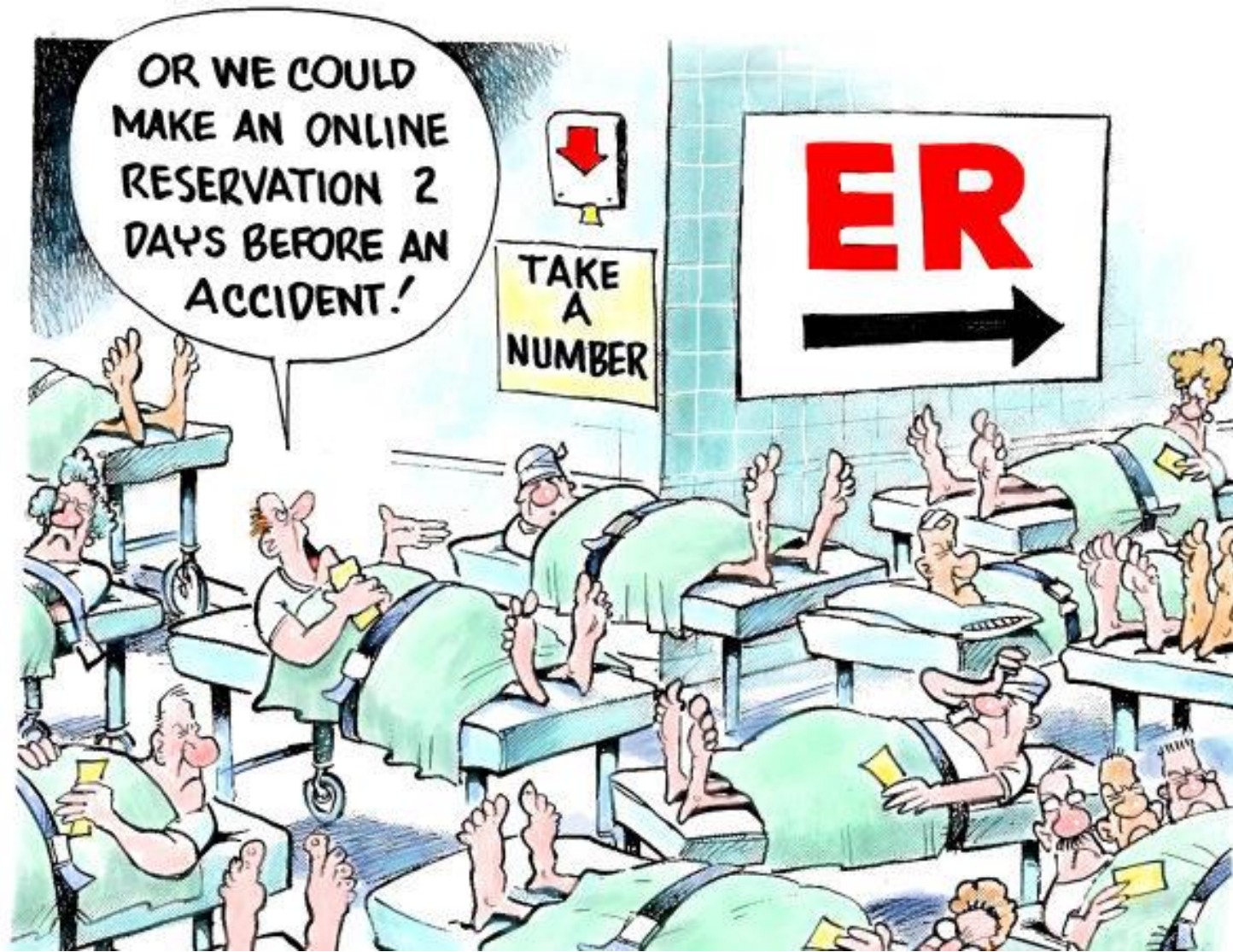


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A Decision Based Model for Bed Booking

Aim(s) (Project Background)



Being one of the busiest Emergency Department (ED) in Singapore, Changi General Hospital (CGH) has an average daily attendance of 420 patients; with about a quarter of these patients being admitted as inpatient. From 2013, the demand for acute beds was persistently high and the percentage of admitted patients waiting more than 10 hours was significant. Thus, CGH is peaking at our bed occupancy with a constant influx of admissions through our ED.

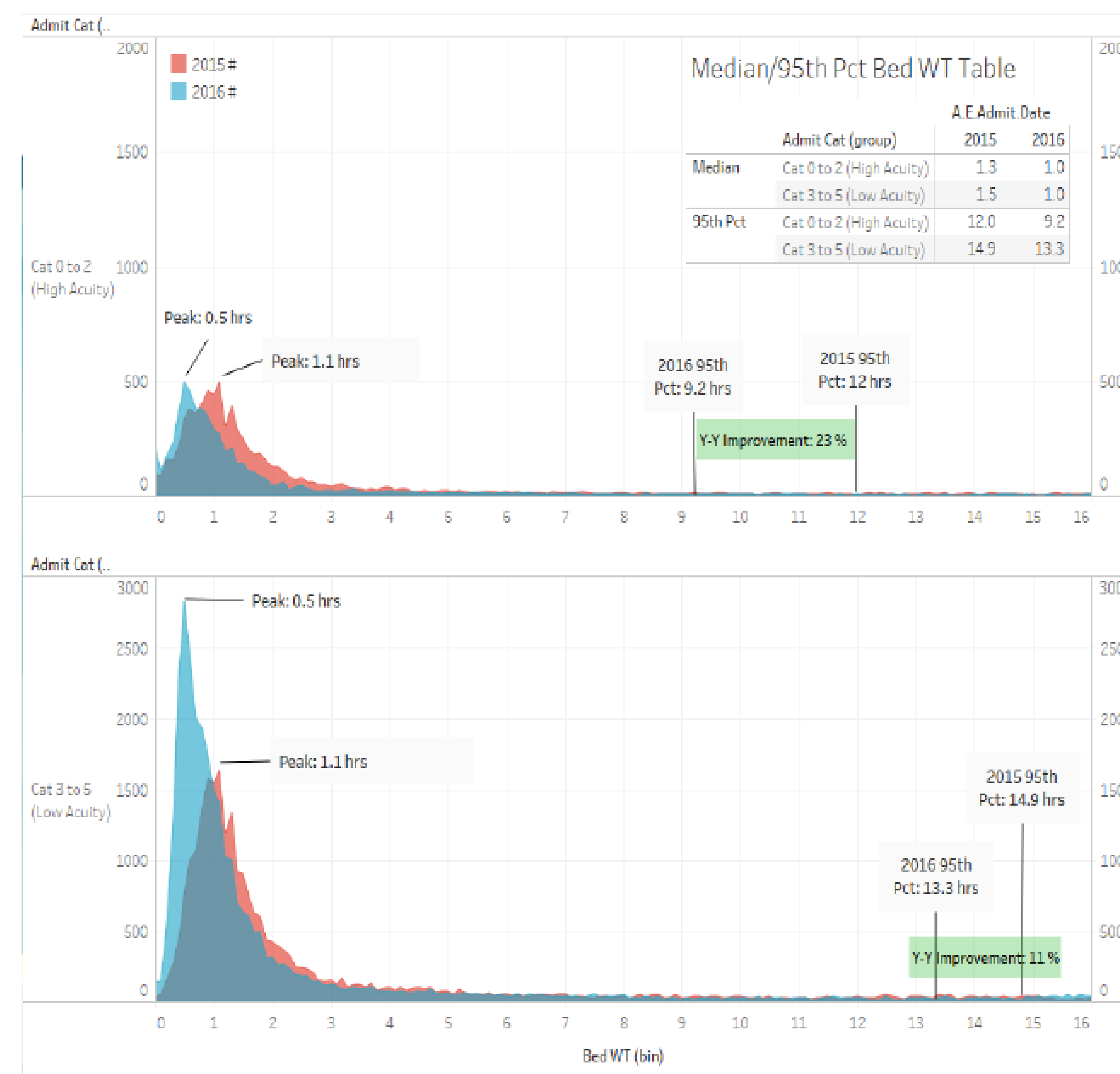
This contributes to the bottleneck of allocating beds for patients with the scarce number of beds available; making bed booking a huge challenge for our Bed Management Unit (BMU).

To reduce the risk of infections, care gaps or inconvenience of patients, this project was started to reduce the long waiting time and rightly siting patients to get an inpatient bed.

Changes (Methods)

Typically when BMU book beds, it will be based on the waiting time of admitted patients. With the support of Data Management and informatics Team, ED Clinical Team and key stakeholders, we found that it is not the best way. Sprouting from our observations, one of the key factors influencing this measure is the bed allocation logic used to allocate beds. Thus an initiative was implemented to improve this logic in 2015.

Measures (Results , Outcomes and Figures)

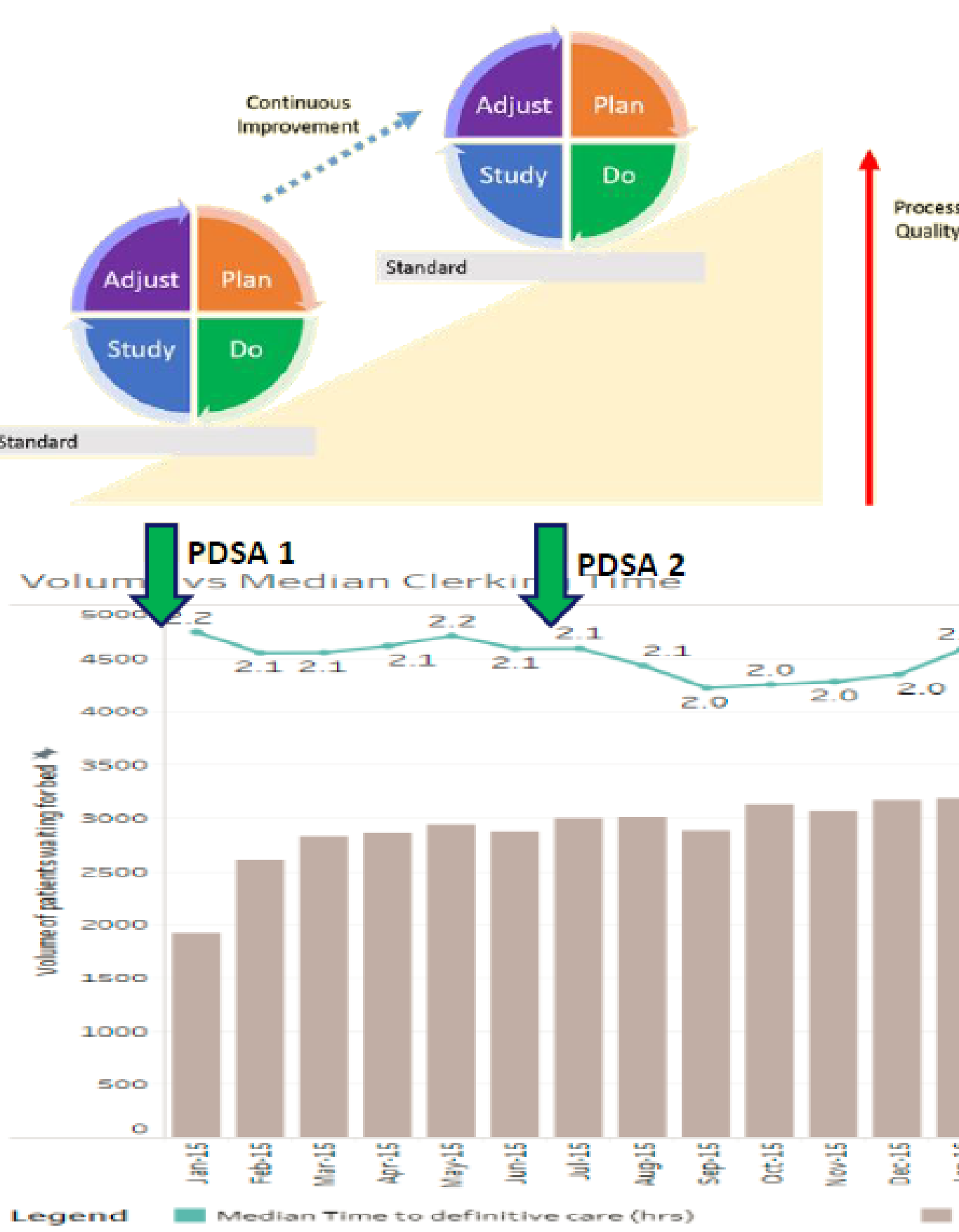


By adding to the bed allocation logic, our aim is to reduce the overall waiting time, especially for high acuity patients. From the data collected, here are our observations and results:

- Reduced Median waiting time for high acuity patients significantly by 39%-76%.
- Observed a higher reduction in 95th percentile wait times for high acuity patients (23%) vs lower acuity patients (11%)
- Improvement in median time for definitive care from 2.2 hours to 1.5 hours

Median Time for Inpatient Definitive Care (IDC, hrs)	2015	2016
IDC@ED	2.1	1.8
IDC@Non-ED	1.8	1.7
IDC Overall	2.1	1.7

IDC % within 4 hours	2014	2015	2016
	81%	85%	88%



Month	Admit Cat (copy)					
	Cat 0	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Jan-15	1.2	1.8	4.0	3.9	5.4	4.1
Feb-15	1.0	1.4	1.5	1.4	1.4	1.4
Mar-15	1.1	2.0	2.4	2.0	2.2	1.8
Apr-15	1.2	2.0	3.1	3.6	3.2	2.5
May-15	1.1	1.5	2.2	2.4	2.1	1.9
Jun-15	1.1	1.3	2.3	2.0	2.0	1.7
Jul-15	1.0	1.6	1.5	1.7	1.5	1.5
Aug-15	1.1	1.2	1.5	1.4	1.4	1.4
Sep-15	1.1	1.2	1.2	1.2	1.2	1.2
Oct-15	1.1	1.2	1.3	1.2	1.2	1.2
Nov-15	1.2	1.2	1.3	1.3	1.2	1.2
Dec-15	1.3	1.2	1.3	1.3	1.2	1.3
Jan-16	1.1	1.3	1.5	1.4	1.4	1.4
Feb-16	1.2	1.3	1.5	1.4	1.4	1.4
Mar-16	1.1	1.4	1.6	1.4	1.5	1.4
Apr-16	0.9	1.1	0.9	1.0	1.0	0.9
May-16	0.8	1.0	1.1	0.9	0.9	0.9
Jun-16	0.7	0.9	1.0	0.9	0.9	0.9
Jul-16	0.9	1.3	1.5	1.7	1.3	1.1
Aug-16	0.8	1.1	1.8	1.5	1.3	1.0
Sep-16	0.6	0.7	0.8	0.8	0.7	0.7
Oct-16	0.7	0.9	0.7	0.8	0.7	0.7
Nov-16	0.7	0.7	1.0	1.1	0.9	0.9

% Improvement	Cat 0	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	-39%	-59%	-76%	-73%	-83%	-79%

Prioritising Patient Based on Admit Acuity Categorisation

Once the doctors in our ED have disposed patients to be admitted, they will categorise patients according to their clinical acuity at the point of admissions; from Cat 0 to Cat 5.

- Cat 0: ICU, HD, Acute Stroke Unit
- Cat 1 being most acute to Cat 5 being the least acute

This new logic then allowed BMU to allocate beds with a decision based model of clinical care factors considered, from patient safety to patient satisfaction.

Conclusion

With limited bed availability, bed management is key as patient safety is paramount during the process and longer waiting period at the ED for an inpatient bed will increase the risk of patients. By applying an acuity categorization system, it has helped BMU to better allocate patients to the right beds while significantly reducing waiting time for higher acute patients who have been identified.

Nonetheless, it is also essential to have a balanced approach, weighing out the different factors, in order to enhance the bed allocation for our patients. Hence, we must continue to review our operational processes and identify gaps in order to improve the flow of our admitted patients and rightly site our patients in a timely manner while enhancing patient experience.