



Singapore Healthcare Management 2017

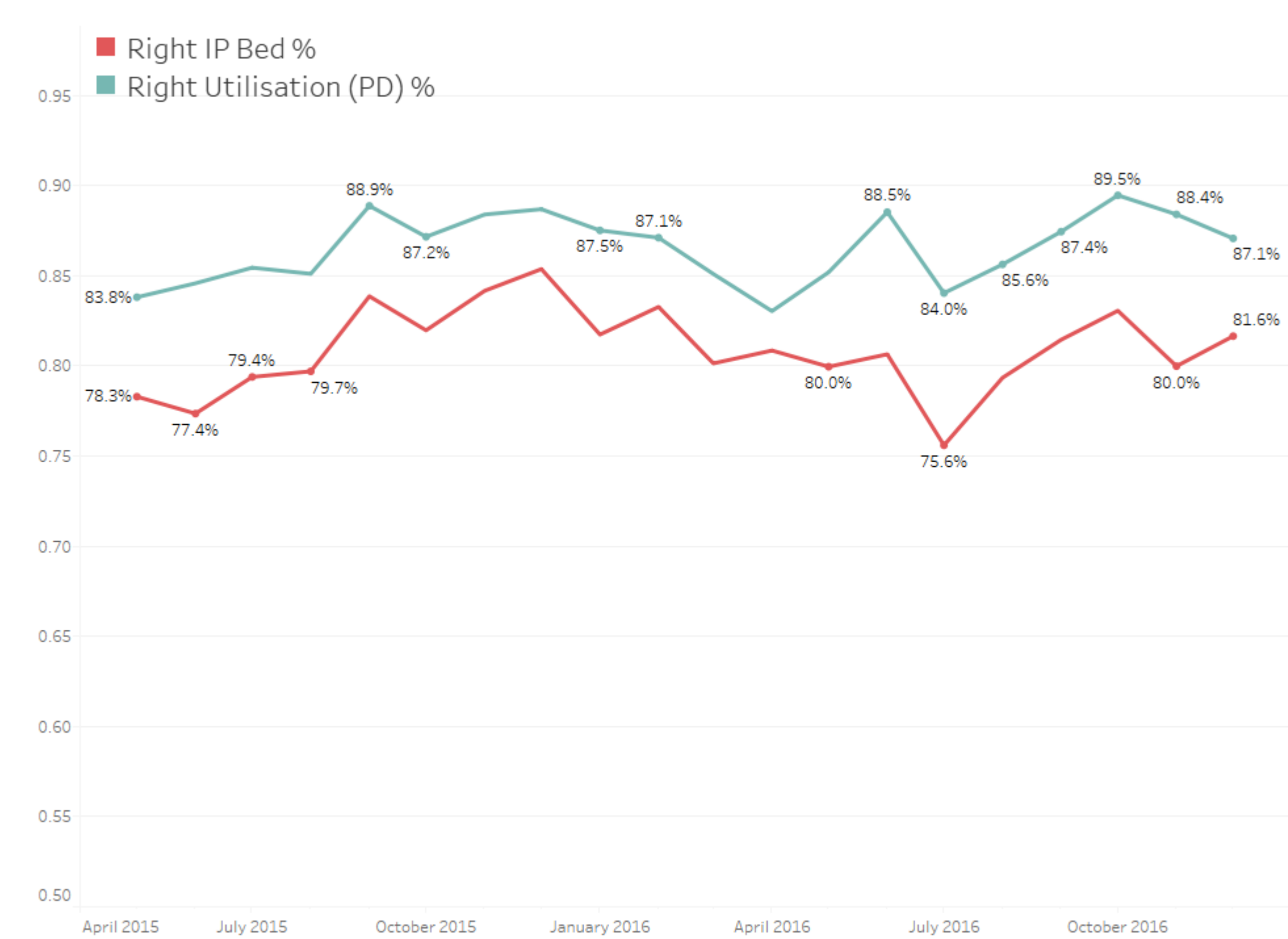
Improving Clinical Productivity via Use of Real-Time Location Tracking System (RTLS) and modified Right Siting based Bed Allocation Logic

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AIMS

Long waiting time for bed at Emergency Department (ED) increases the likelihood of care gaps and/or safety incidents. When ED observation units are overcrowded with admitted patients, it is crucial for inpatient teams to find their patients quickly to ensure that timely provision of definitive care is not compromised. Meanwhile it is also important to optimise clinical productivity and reduce care dispersion.

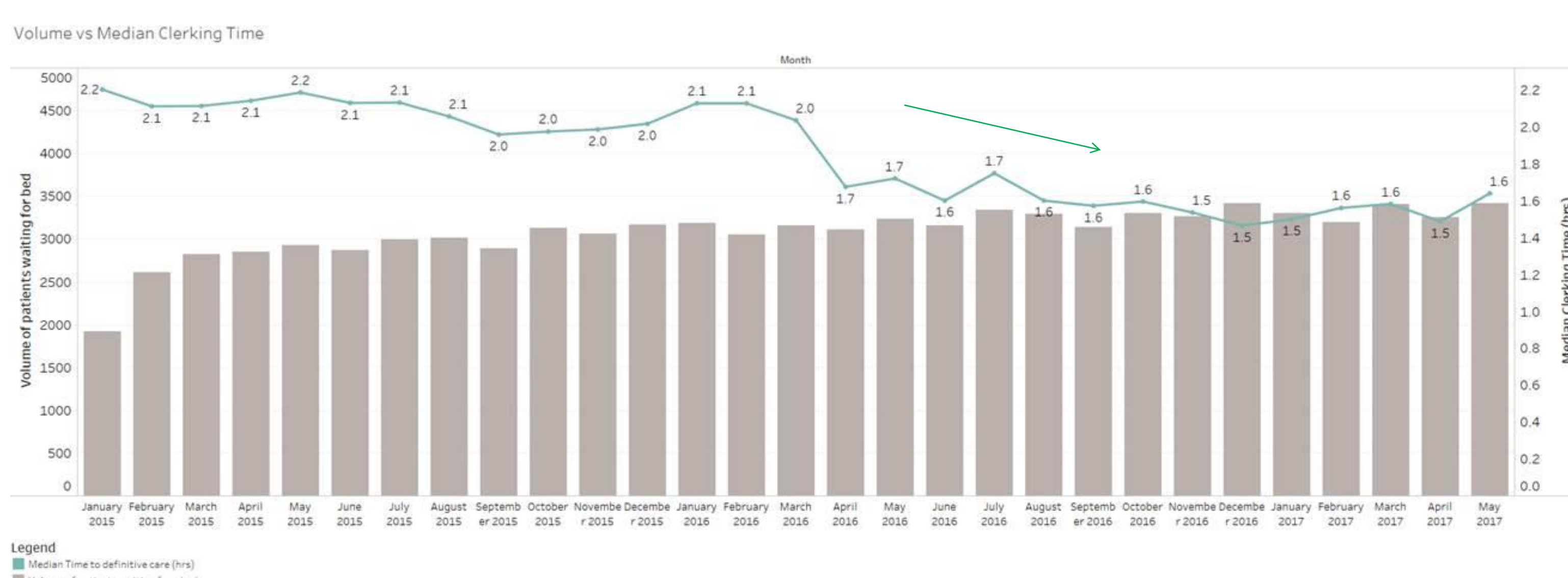


METHODOLOGY

In the absence of a real-time patient location tracking system in 2013, precious time was being lost by inpatient care teams to locate patient at ED observation units. The ED team saw the need to precisely determine the patient location down to the bed level. During bed crunch situations, it is not uncommon for higher acuity patients being allocated general beds, which may result in care gaps. This scatter of patients across multiple wards results in avoidable extra movement time for inpatient care teams and adds to the existing challenge of locating inpatients promptly. Right siting patients to the right ward/bed based on the patients' admitted speciality reduced care dispersion.

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

Clerking Doctor Specialty	Patient Counts		Doctor Visit Counts (Days)		Patient Counts per Doctor Visit Day	
	2015	2016	2015	2016	2015	2016
Cardiology	3812	4660	733	774	5.20	6.02
General Medicine	14180	17167	3857	5194	3.68	3.31
General Surgery	4583	5137	1033	1097	4.44	4.68
Geriatric Medicine	3542	3689	638	436	5.55	8.46
Orthopaedic Surgery	3209	4108	695	781	4.62	5.26
Respiratory & Critical Care Medicine	1151	1232	325	392	3.54	3.14
Urology	701	651	238	221	2.95	2.95



Inpatient Care Dispersion

	MB L4	MB L5	MB L6	MB L7	MB L8	MB L9	IB	ICU	Others
CCVM	3.4%	3.0%	2.3%	2.0%	76.2%	2.7%	0.1%	6.8%	3.4%
CDER	5.5%	21.2%	10.1%	11.1%	18.1%	27.5%		0.2%	6.3%
CEND	11.8%	19.5%	8.5%	7.1%	19.6%	26.5%		1.2%	5.5%
CENT	7.9%	8.9%	12.4%	19.3%	2.0%	29.1%	14.1%	4.0%	2.4%
CEYE	8.3%	5.5%	21.6%	32.7%	4.9%	17.3%		0.3%	9.4%
CGAS	12.4%	19.9%	9.5%	7.9%	19.1%	24.3%		1.9%	4.9%
CGER	0.6%	1.4%	0.3%	1.2%	2.4%	0.5%		91.5%	0.3%
CGMG	3.7%	19.1%	9.6%	6.9%	15.2%	16.6%		9.8%	0.4%
CINF	18.2%	15.2%	4.3%	14.4%	12.6%	25.6%		5.1%	4.3%
CMED	16.7%	18.2%	7.9%	7.4%	17.6%	23.6%		0.3%	3.1%
CNEM	30.6%	2.8%	5.6%	2.8%	16.7%	19.4%		19.4%	2.8%
CNES	4.4%	15.5%	20.7%	28.4%	2.8%	5.7%		4.4%	17.0%
COMS	4.6%	15.7%	14.3%	23.9%	3.6%	31.4%		0.4%	4.6%
COTO	4.7%	6.6%	36.9%	24.9%	3.2%	17.6%		0.1%	4.8%
CPSY	98.6%	0.1%				0.6%		0.6%	0.1%
CREN	6.9%	18.2%	7.7%	8.5%	21.2%	33.7%		0.1%	2.7%
CRES	11.5%	18.1%	6.6%	13.3%	15.3%	24.0%		1.0%	4.8%
CRMD	1.6%	1.6%	1.2%	1.9%	1.5%	88.4%		0.2%	1.8%
CSUR	4.3%	10.4%	26.1%	31.9%	3.8%	14.0%		0.1%	5.3%
CURO	4.1%	9.0%	29.1%	28.6%	4.0%	20.3%		0.1%	1.2%

RESULT / OUTCOMES

Improvement in clinical productivity was measured via reduction in time spent for locating the right patient at ED. Additionally, the proportion of right sited patients and time for definitive care at ED by inpatient teams were used as key measures. Reduction in care dispersion by monitoring the scatter of patients based on the first bed assigned in the allocated inpatient wards was observed for three specialities Cardiology, Geriatric Medicine and General Surgery.

The Right Siting initiative by our bed management unit resulted in a decline in care teams movement across multiple inpatient wards, translating to manhours savings (productivity gain) by **2.58 FTE** annualised for doctors in these 3 departments in FY16. Overall improvement in percentage of right sited patients from 77% (2015) to 82% (2016) and reduction in median time for definitive care was also observed from 2.2 hours (2015) to 1.6 hours (2017).

KPIs	Description of Initiative	Productivity Targets	Est Savings	Status									
- Reduce manpower	Key Target Area 2: Process Decongestion Initiatives for Patient Flow Improvement: Pre-admission: i) Increased holding capacity (ATA + SSU expansion) ii) Reduce demand (GP First + General Practitioner Empowerment Programme / GPEP) Inflight: i) Increase demand (Transformation of Demand Beds + Opening of Integrated Building) ii) Improve bed management (Enhancing Right Siting Algorithm) Discharge: i) Internal bed management (Discharge Coordinating Tower + Community Referral Team) ii) Interim discharge locations (L1 + L8)	Improved right siting by 1.4% in FY16 (86.9%) vs FY15 (85.7%).	FY16 (Est): 2.58 FTE for 3 departments FY15: 3.53 FTE or approx \$317,949 /year	On-going									
- Improve quality		Reduction in care dispersion across wards translates to productivity gains for doctors (lower movement time)											
- Improve resource utilisation		<table border="1"> <tr><td>Cardiology (31)</td><td>8</td><td>0.77</td></tr> <tr><td>Geriatric (45)</td><td>9</td><td>1.26</td></tr> <tr><td>Surgery (44)</td><td>4</td><td>0.55</td></tr> </table>			Cardiology (31)	8	0.77	Geriatric (45)	9	1.26	Surgery (44)	4	0.55
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	Reduced median waiting time at ED for bed by 21% vs FY15 Zero long WT patients (above 24 hours wait) in FY16 Improved Discharge before noon from 19% (FY15) to 23% (FY16)												
05/01/2017													
UPCOMING	ONGOING	COMPLETED CLINICAL	COMPLETED NURSING	ALLIED HEALTH	COMPLETED OPS / IT								

CONCLUSION

Right siting of admitted patients to the right ward/beds augments patient safety, has positive impact on clinical productivity by reducing care teams movement time and reduces care dispersion. Meaningful use of the RTLS technology will translate to better care quality, patient safety, operational efficiency and productivity gains.