Sustainability Phase: Increase Rate of Decant for Eligible Patients Requiring Admission from TTSH Emergency Department to Alexandra Hospital (AH)

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Mission Statement

To Increase the Rate of Successful Decant from Tan Tock Seng Hospital Emergency Department to Alexandra Hospital from 56% to 80% (stretch goal 100%) for Eligible Patients* over a sustained period

*Eligible Patients: (1) Patients requiring admission; (2) Patients fulfil assessment of suitability to be decanted (a) Include Medical Discipline & (b) Exclude Specialty Medical Care (eg. Cardiology, Neurology, Renal, Gastroenterology & Surgery and Orthopaedics; (3) Patient / NOK agree to decant to Alexandra Hospital

Team Members

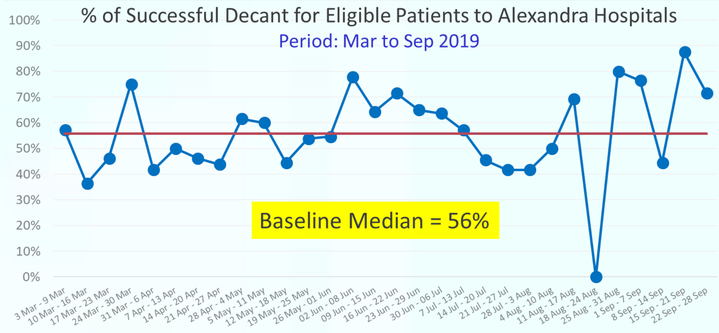
	Name	Designation	Department
Team Leader	Dr Michael Chia Yih Chong	Senior Consultant	Emergency Medicine
TTSH Team Members	Dr Lee Chiao Hao	Consultant	Emergency Medicine
	Dr Loi Tsuan-Hao	Principal Resident Physician	Emergency Medicine
	Qiu Hong	Assistant Nurse Clinician	Emergency Medicine
	Ethel Kan Kwai Lam	Senior Manager	Emergency Medicine
	Ng Sheh Li	Assistant Manager	Bed Management Unit
	Charlene Tey Zhi Min	Senior Executive	Financial Counselling
AH Team Members	Dr Zulkarnain Bin Ab Hamid	Consultant	AH Urgent Care Centre
	Chiew Ying Siang Shane	Senior Patient Service Associate	AH Urgent Care Centre
	Nurul Azura Binte Hamidi	Patient Service Associate	Bed Management Unit
Sponsors	Dr Keith Ho	Head of Department	AH Urgent Care Centre
	Adj Asst Prof Ang Hou	Head of Department	Emergency Medicine
Mentor	Adj A/Prof Tan Hui Ling		

Evidence for a Problem Worth Solving

Top 5 Reasons of Rejection by Alexandra Hospital

1. Patients with background of Psychiatric and/or Alcoholic issues
2. Patients with undifferentiated chest pain, raised troponin, needing telemetry and/or Cardiology review
3. Patients with undifferentiated anaemia
4. Patients with hypo/hyper-kalemia
5. Patients with Fever AND
   - Abdominal pain, tender => unable to rule out intra-abdominal sepsis
   - Joint pain, back pain => unable to rule out septic arthritis / discitis
   - Headache => unable to rule out meningoencephalitis
   - Cellulitis with bullous => unable to rule out necrotizing fasciitis
   - UTI with previous renal stone or ureter device => unable to rule out kidney abscess

Current Performance of a Process

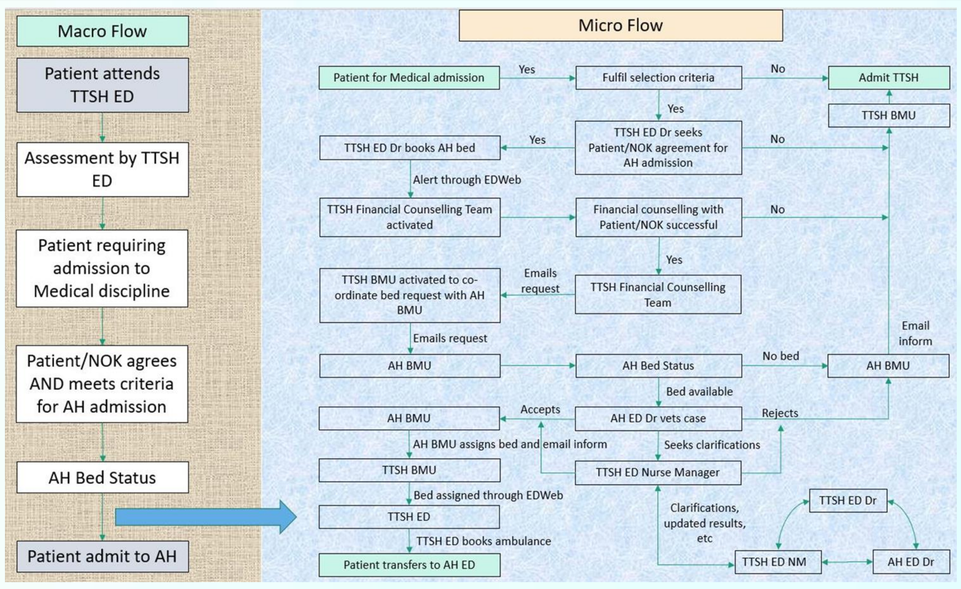


Month	March '19				April '19				May '19				June '19			
Date	3 Mar - 9 Mar	10 Mar - 16 Mar	17 Mar - 23 Mar	24 Mar - 30 Mar	31 Mar - 6 Apr	7 Apr - 13 Apr	14 Apr - 20 Apr	21 Apr - 27 Apr	28 Apr - 4 May	5 May - 11 May	12 May - 18 May	19 May - 25 May	26 May - 01 Jun	02 Jun - 08 Jun	09 Jun - 15 Jun	16 Jun - 22 Jun	23 Jun - 29 Jun
No. of eligible patients & agreed for decant	7	11	13	8	12	8	13	16	13	10	9	13	11	9	14	7	20
No. of successful decants	4	4	6	6	5	4	6	7	8	6	4	7	6	7	9	5	13

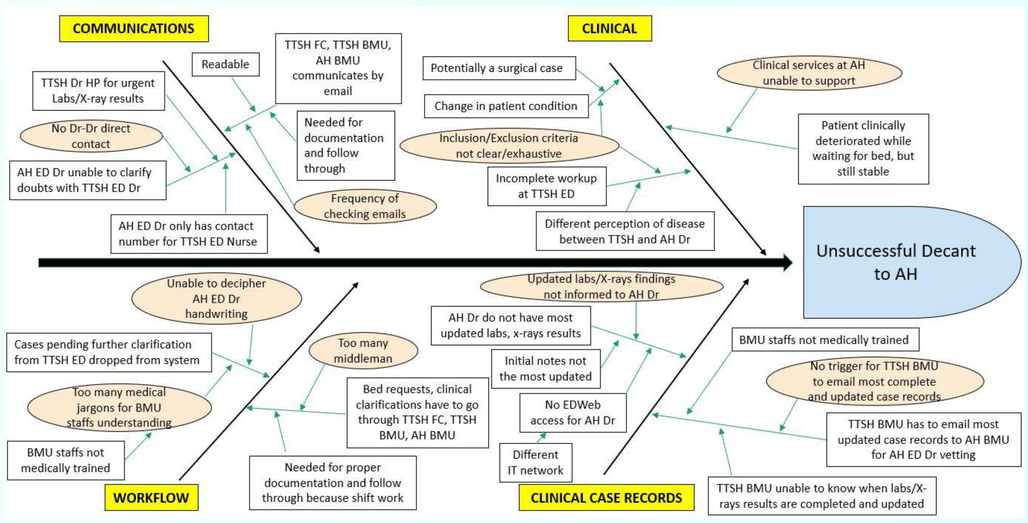
Month	July '19				Aug '19				Sept '19			
Date	30 Jun - 06 Jul	7 Jul - 13 Jul	14 Jul - 20 Jul	21 Jul - 27 Jul	28 Jul - 3 Aug	4 Aug - 10 Aug	11 Aug - 17 Aug	18 Aug - 24 Aug	25 Aug - 31 Aug	1 Sep - 7 Sep	8 Sep - 14 Sep	15 Sep - 21 Sep	22 Sep - 28 Sep
No. of eligible patients & agreed for decant	11	14	11	12	12	14	13	8	10	17	9	8	14
No. of successful decants	7	8	5	5	5	7	9	0	8	13	4	7	10

Source: Decant Data collected by TTSH ED & Alexandra Hospital

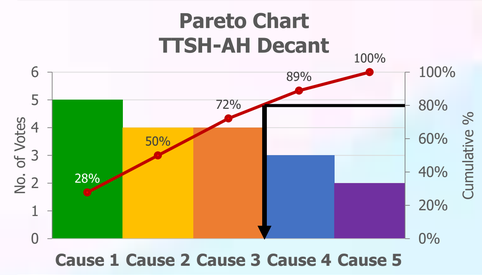
Flow Chart of Process



Cause and Effect Diagram



Pareto Chart



Cause 1	No AH Doctor - TTSH Doctor Direct Contact
Cause 2	Inclusion / Exclusion Criteria Not Clear / Exhaustive
Cause 3	AH Doctor No access to Complete Lab / X-ray Results
Cause 4	Incomplete EDWeb Documentation
Cause 5	No Trigger for TTSH BMU to Email Updated Case Records

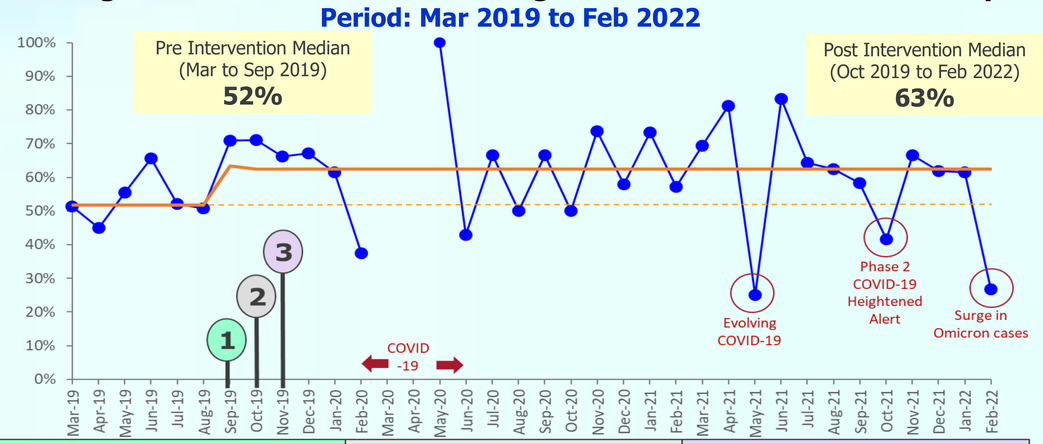
Implementation

Root Cause	Intervention	Implementation Date
Cause 1: No AH Doctor - TTSH Doctor Direct Contact	Provided TTSH ED Doctor mobile phone number to AH ED Doctor for direct contact 24hrs, 365 days.	30 Sept 2019
Cause 4: Incomplete EDWeb Documentation	The need for proper documentation shared at TTSH ED Department M&M	25 Oct 2019
Cause 5: No Trigger for TTSH BMU to Email Updated Case Records	ED Doctor to alert TTSH BMU through EDWeb to fax clinical notes once updated and completed	29 Nov 2019

Results

Percentage of Successful Decant for Eligible Patients to Alexandra Hospital

Period: Mar 2019 to Feb 2022



PDSA 1 (30 Sep 2019): Provide TTSH ED Senior Doctor On-Shift Mobile Number	PDSA 2 (25 Oct 2019): TTSH ED Doctor to Maintain Proper Clinical Records	PDSA 3 (29 Nov 2019): Trigger for TTSH BMU to email updated case records

	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22
No. of eligible patients & agreed for AH decant	39	49	45	61	48	57	48	38	71	67	52	8	0	0	4	7	6	4	3	2	19	19	15	14	36	16	4	6	14	8	12	12	6	21	13	15
No. of successful decants	20	22	25	40	25	29	34	27	47	45	32	3	0	0	4	3	4	2	2	1	14	11	11	8	25	13	1	5	9	5	7	5	4	13	8	4

Spread Phase: The same strategy and interventions were applied to eligible patients suitable for decant to Raffles Hospital. There was an increased from baseline median of 0% to post intervention median of 14% (Period: Jan 2020 to Feb 2022).

Cost Savings

	Pre-Implementation (Mar 2019 to Sep 2019)	Post-Implementation (Oct 2019 to present)
% of Patients Decanted to AH	56%	67%
Successful average number of patients decanted (Per Week)	6.47 patients	9.15 patients
Assume: Average LOS per patient in TTSH General Ward is 3 days		
No. of Bed Days Saved (Per Week)	(9.15 – 6.47) x 3 = **8.04**	
Total No. of Bed Days Saved (Annualized)	8.04 x 52 = **418** **418** Bed Days Saved	
Difference in Bed Days in Monetary Terms (Annualized):	418 x $1,114 = $465,652 **$465,652** (Savings in Monetary Terms)	

Note: Unit Cost Inpatient Ward Stay = $1114/patient/day

Problems Encountered

1. Difficult to implement project involving different hospitals (TTSH and AH); and different departments (AH Emergency Department and AH General Medicine).
2. Difficult to co-ordinate common time for meetings when CPIP group is large.
3. Very important to have strong support from Sponsors.
4. Knowing the ground & work processes is essential for planning interventions.
5. As interventions involve multiple teams (medical, nursing to administrative staffs), very important to check understanding between all parties.
6. Best to communicate face-to-face to avoid misunderstanding, compared to using text messages via emails or WhatsApp.

Strategies to Sustain

1. Continual education
   - New staff orientation (doctors, nurses, administrative staffs)
   - Reminders at monthly M&M Rounds; Nursing Forums; Roll Calls
2. Empowerment of ground staff - Identify champions who will constantly remind or new methods to operationalising workflow
3. Communications with other hospital
   - Open communication channels for constant feedback, review and audit.
   - No blame culture
   - Building trust
   - Willing to try new ways/methods of doing