新界西·醫院聯網
New Territories West Cluster

Modification of Admission Process to improve the Quality and Efficiency of acute inpatient care in TMH M&G department through Inter-departmental Cooperation

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HA Convention
May 2010

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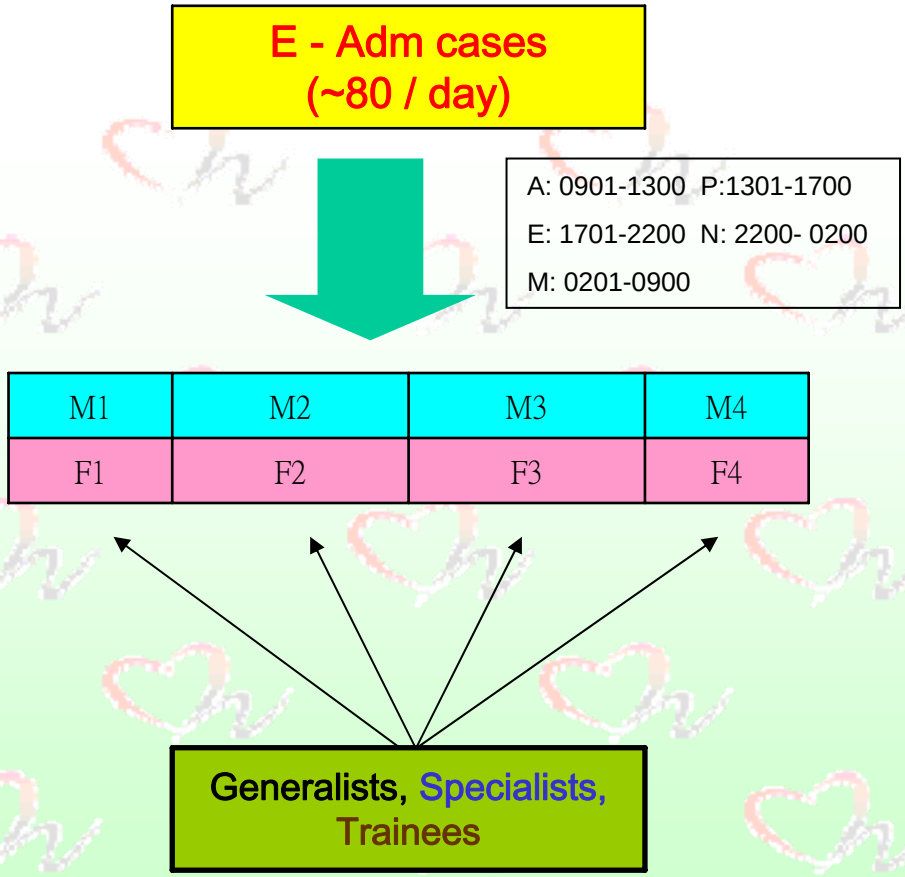
Tuen Mun Hospital, NTWC

Background (1)

- TMH M&G served 2,500 – 3,000 episodes of inpatient care per month in 2009
  - >80% through A&E
  - Daily E admission = 70 – 80 cases

Background (2)

- A&E admission cases
  - Even distribution
    - 4 pairs of M&G acute intake wards
  - Rota of 5 periods per day
    - A, P, E, N, M
- Medical staffs
  - Equal division to 4 teams



Background (3)

- Patients' care type matching
  - General medical (GMED) care
    - ~ 85%
  - Subspecialty care
    - Admitted to the appropriate subspecialty by chance
    - Internal consultation

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1 April08-30 Nov08 Med(CCU)/MED(GER)/MED(INT		Clinical Admission								Emergency Admission								Row Total		
		Admission from Non Elderly Home				Admission from Elderly Home				Admission from Non Elderly Home				Admission from Elderly Home						
Institution (EIS)	Discharge Specialty (IPAS)	DP Discharges and Deaths	IP Discharges and Deaths	No. of Deaths within 24 hr Admissions	DP Discharges and Deaths as % of total Discharges and Deaths	DP Discharges and Deaths	IP Discharges and Deaths	No. of Deaths within 24 hr Admissions	DP Discharges and Deaths as % of total Discharges and Deaths	DP Discharges and Deaths	IP Discharges and Deaths	No. of Deaths within 24 hr Admissions	DP Discharges and Deaths as % of total Discharges and Deaths	DP Discharges and Deaths	IP Discharges and Deaths	No. of Deaths within 24 hr Admissions	DP Discharges and Deaths as % of total Discharges and Deaths	DP Discharges and Deaths	IP Discharges and Deaths	No. of Deaths within 24 Admissio
TMH	ASU	0	13	0	0	0	1	0	0	0	293	4	0	0	39	1	0	0	346	5
TMH	CARD	1268	377	0	77.08	32	13	0	71.11	0	319	0	0	0	17	0	0	1300	726	0
TMH	CCP	0	7	0	0	0	1	0	0	0	82	0	0	0	9	0	0	0	99	0
TMH	CCU	24	199	1	10.76	1	4	0	20	0	61	14	0	0	3	2	0	25	267	17
TMH	ENDO	0	6	0	0					0	1	0	0					0	7	0
TMH	GI	50	166	0	23.15	1	22	1	4.35	0	83	1	0	0	8	0	0	51	279	2
TMH	HAEM	361	144	0	71.49	9	1	0	90	0	80	0	0	0	3	0	0	370	228	0
TMH	MC	0	163	0	0	0	252	1	0	0	821	0	0	0	613	0	0	0	1849	1
TMH	MED	203	1132	3	15.21	7	232	0	2.93	0	9442	96	0	0	2924	75	0	210	13730	174
TMH	MEDR	0	56	0	0	0	10	0	0	0	274	0	0	0	35	0	0	0	375	0
TMH	MGER	0	26	0	0	0	21	0	0	0	268	0	0	0	134	0	0	0	449	0
TMH	MID	1	25	0	3.85	0	1	0	0	0	88	0	0	0	17	1	0	1	131	1
TMH	MNEU	3	41	0	6.82	0	1	0	0	0	32	0	0	0	1	0	0	3	75	0
TMH	MRES	17	217	0	7.26	0	7	0	0	0	66	0	0	0	2	0	0	17	292	0
TMH	RACS	124	258	0	32.46	10	22	0	31.25									134	280	0
TMH	REN	5940	209	0	96.6	409	16	0	96.24	0	475	1	0	0	146	2	0	6349	846	3
TMH	RESP	0	3	0	0					0	51	0	0	0	3	0	0	0	57	0
TMH	RHEU	3	77	0	3.75					0	72	0	0	0	1	0	0	3	150	0
TMH	RSU	0	36	0	0	0	11	0	0	0	312	0	0	0	47	0	0	0	406	0
TMH	TB	0	12	0	0	0	1	0	0	0	54	0	0	0	4	0	0	0	71	0
	TMH Total	7994	3167	4		469	616	2		0	12874	116	0	0	4006	81	0	8463	20663	203
	Grand Total :	21610	6147	12	77.85	693	966	5	41.77	0	26571	212	0	0	6833	114	0	22303	40517	343

Aug08-Jul09:

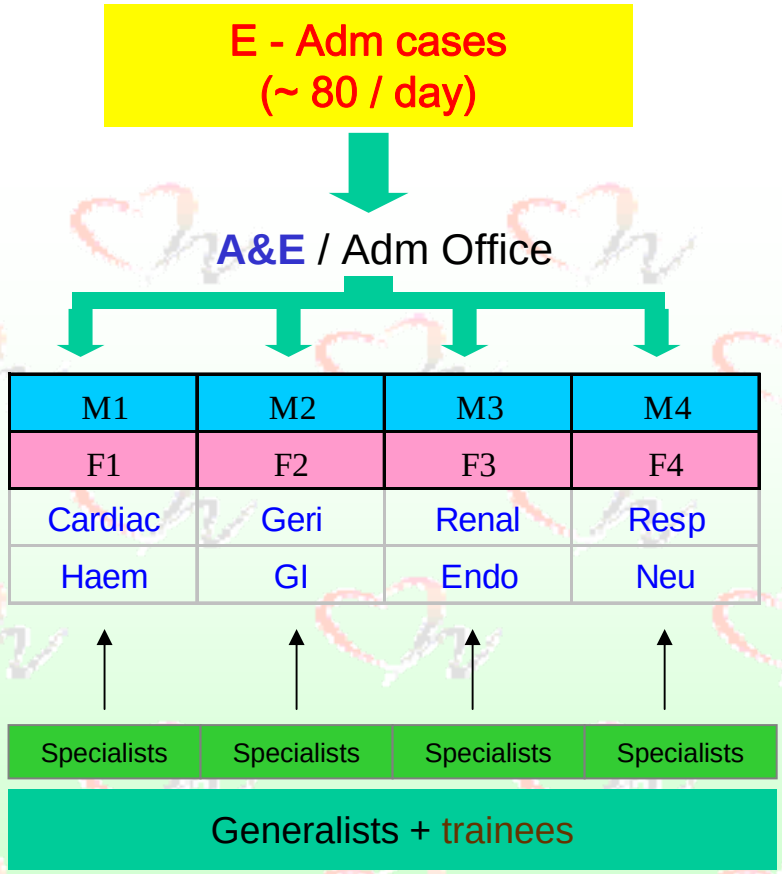
GMED% = ~85%

Admission Process Re-engineering

- Objective: Better subspecialty matching of E-admission patients to doctors
  1. ↑ no. of E-admission patients being taken care by subspecialty expertise
     - ↓ % of GMED category of the E-admission patients
  2. ↑ efficiency of inpatient care
     - ↓ ALOS of inpatient episodes
  3. Maintain even distribution of admission workload among the 4 pairs of wards

Method

- Medical staff regrouping
  - 4 subspecialty teams
    1) Cardiac + Hematology
    2) Geriatrics + Gastroenterology
    3) Renal + Endocrine + Rheu
    4) Respiratory + Neurology
- Ward restructuring
  - 4 pairs of subspecialty wards to match with the 4 teams
  - Admit both GMED & corresponding Subspecialty cases



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Matching of E-admission with subspecialty

A&E doctors decided on the most appropriate care need of each M&G admission

- Subspecialty Vs GMED
- Tools: the checklist with common medical conditions grouped under individual subspecialty

*Acknowledgement to UCH M&G

Subspecialty E - Admission Criteria
TMH M&G

Updated on 1/6/09

Patient's Label

Cardiac (CARD)
- ☐ AMI
- ☐ Acute coronary syndrome <80 yo
- ☐ Advanced degree heart block
- ☐ Congestive heart failure <65 yo
- ☐ Unstable or variant angina pectoris
- ☐ Significant arrhythmia (include PSVT, fast AF, non-sustained VT)
- ☐ CRHD and Cardiomyopathy with heart failure
- ☐ Hypertensive emergency
- ☐ Clinically confirmed infective endocarditis
- ☐ Cardiogenic shock
- ☐ Pericarditis
- ☐ Myocarditis
- ☐ Cardiomyopathy (dilated / hypertrophic / restrictive)
- ☐ Cardiac syncope
- ☐ Pericardial effusion
- ☐ Complication of invasive cardiac procedures
- ☐ Aortic dissection

Rheumatology (RHEU)
- ☐ Rheumatoid arthritis
- ☐ Ankylosing spondylitis
- ☐ Psoriatic arthritis
- ☐ Reactive arthritis
- ☐ Systemic lupus erythematosus
- ☐ Mixed Connective Tissue Disease
- ☐ Systemic sclerosis
- ☐ Sjogren's syndrome

Haematology (HAEM)
- ☐ Acute leukemia and Lymphoma
- ☐ Chronic myeloid leukemia
- ☐ Neutropenia fever
- ☐ Thrombocytopenia
- ☐ Bleeding tendency
- ☐ Haemophilia
- ☐ All chemotherapy related complication
- ☐ Patients with follow up in MHEM_HU clinic; MHEM_Nurs clinic
- ☐ Post stem cell transplant patients

Geriatrics (MGER)
1 General Criteria (assessed by admission office)
- ☐ **OAH resident**
- ☐ **IDSP active members (special FU card)**
- ☐ **Geri OPD and GDH active cases**

With diagnosis NOT indicative of admission to other specialties

2 Clinical Criteria (assessed by A&E medical staffs)

Elderly > age 75 with problems that are likely to be benefited from Geriatric assessment and intervention :
- ☐ **Suspected elder abuse**
- ☐ **Recurrent fall**
- ☐ **Delirium**
- ☐ **Pressure sores**
- ☐ **Malnutrition**

General Medical (MED)
- ☐ No criterion fulfilled

Respiratory Medicine (MRES)
- ☐ Massive haemoptysis
- ☐ Asthma attack
- ☐ Lung Mass for investigation
- ☐ Pneumothorax
- ☐ Suspected pulmonary/miliary tuberculosis
- ☐ Lobar pneumonia
- ☐ Massive Unilateral pleural effusion
- ☐ Smoke / toxic gas inhalation
- ☐ COPD exacerbation +/- BIPAP
- ☐ TB drug complications

Gastroenterology (GI)
- ☐ Cholangitis
- ☐ Upper GI Bleeding
- ☐ Chronic diarrhoea
- ☐ Acute hepatitis / hepatic failure
- ☐ Cirrhosis
- ☐ Ascites
- ☐ Hepatic encephalopathy
- ☐ Chronic pancreatitis
- ☐ Alcoholic liver disease
- ☐ Inflammatory bowel disease
- ☐ Complications of intervention by GI team

Renal (REN)
- ☐ Acute Renal Failure
- ☐ Nephritic Syndrome
- ☐ Patients suitable for Ward B6 but bed n/a

Ward B6
- ☐ Patient on RRT with CAPD, HD or renal transplanted related complication

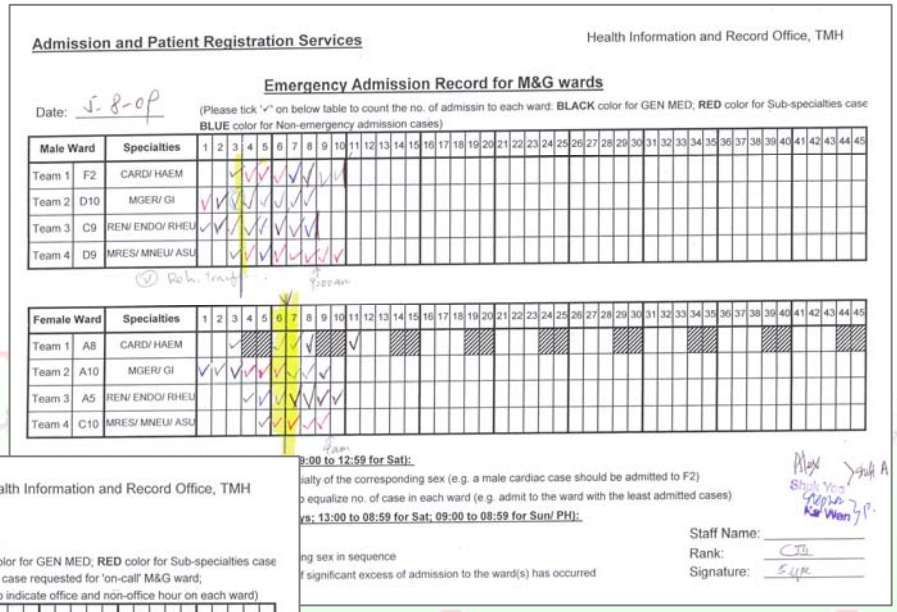
Neurology (MNEU / ASU)
- ☐ CNS infection
- ☐ Myasthnia Gravis
- ☐ Inflammatory neuropathy
- ☐ Demyelinating disorders
- ☐ Complications after LP, muscle Bx
- ☐ Epilepsy
- ☐ Muscular dystrophy
- ☐ TIA Stroke
- ☐ Movement disorders
- ☐ Acute visual loss other than ocular or traumatic cause
- ☐ Neuralgia disorders
- ☐ Acute flaccid paralysis not requiring ventilator support

Endocrine (ENDO)
- ☐ DKA / NKH
- ☐ Hypoglycaemia
- ☐ Poor DM Control
- ☐ Diabetic foot
- ☐ Thyrotoxicosis / Grave's ophthalmopathy
- ☐ Parathyroid disease, servere hypercalcaemia
- ☐ Adrenal crisis
- ☐ Phaeochromocytoma
- ☐ Pituitary : Acromegaly / Cushing Disease
- ☐ Diabetes Insipidus
- ☐ Periodic paralysis
- ☐ Obesity related syndrome
- ☐ Thyroid disease

Balancing the daily ward admission load

Admission office

- Assign the admission to the corresponding subspecialty ward according to A&E decision
- GMED cases were used to even out the variance in admission loading to different wards each day



Admission and Patient Registration Services

Health Information and Record Office, TMH

Emergency Admission Record for M&G wards

Date: 7-8-0P

(Please tick '√' on below table to count the no. of admissin to each ward: **BLACK** color for GEN MED; **RED** color for Sub-specialties case
BLUE color for Non-emergency admission cases, e.g. scheduled clinical admission case requested for 'on-call' M&G ward;
GREEN color for 'takeover' adjustment by noon on every weekdays; Mark a line '|' to indicate office and non-office hour on each ward)

Male Ward		Specialties
Team 1	F2	CARD/ HAEM
Team 2	D10	MGER/ GI
Team 3	C9	REN/ ENDO/ RHEU
Team 4	D9	MRES/ MNEU/ ASU

Female Ward		Specialties
Team 1	A8	CARD/ HAEM
Team 2	A10	MGER/ GI
Team 3	A5	REN/ ENDO/ RHEU
Team 4	C10	MRES/ MNEU/ ASU

During Office hours (09:00 to 17:00 for weekdays; 09:00 to 13:00 for Sat):
Cases with specific specialties → wards labeled of specialty of the corresponding sex (e.g. a male cardiac case should be admitted to F2)
Cases of General Med → wards of corresponding sex to equalize no. of case in each ward (e.g. admit to the ward with the least admitted cases)
During Non-Office hours (17:01 to 08:59 for weekdays; 13:01 to 08:59 for Sat; 09:00 to 08:59 for Sun/ PH):
a) Irrespective of specific specialties
b) Admit in batches of **THREE** to each wards of corresponding sex in sequence
c) Particular ward(s) may jump the admissin sequence if significant excess of admission to the ward(s) has occurred

Staff Name: A) P) N)
Rank: A) P) N)
Signature: A) P) N)

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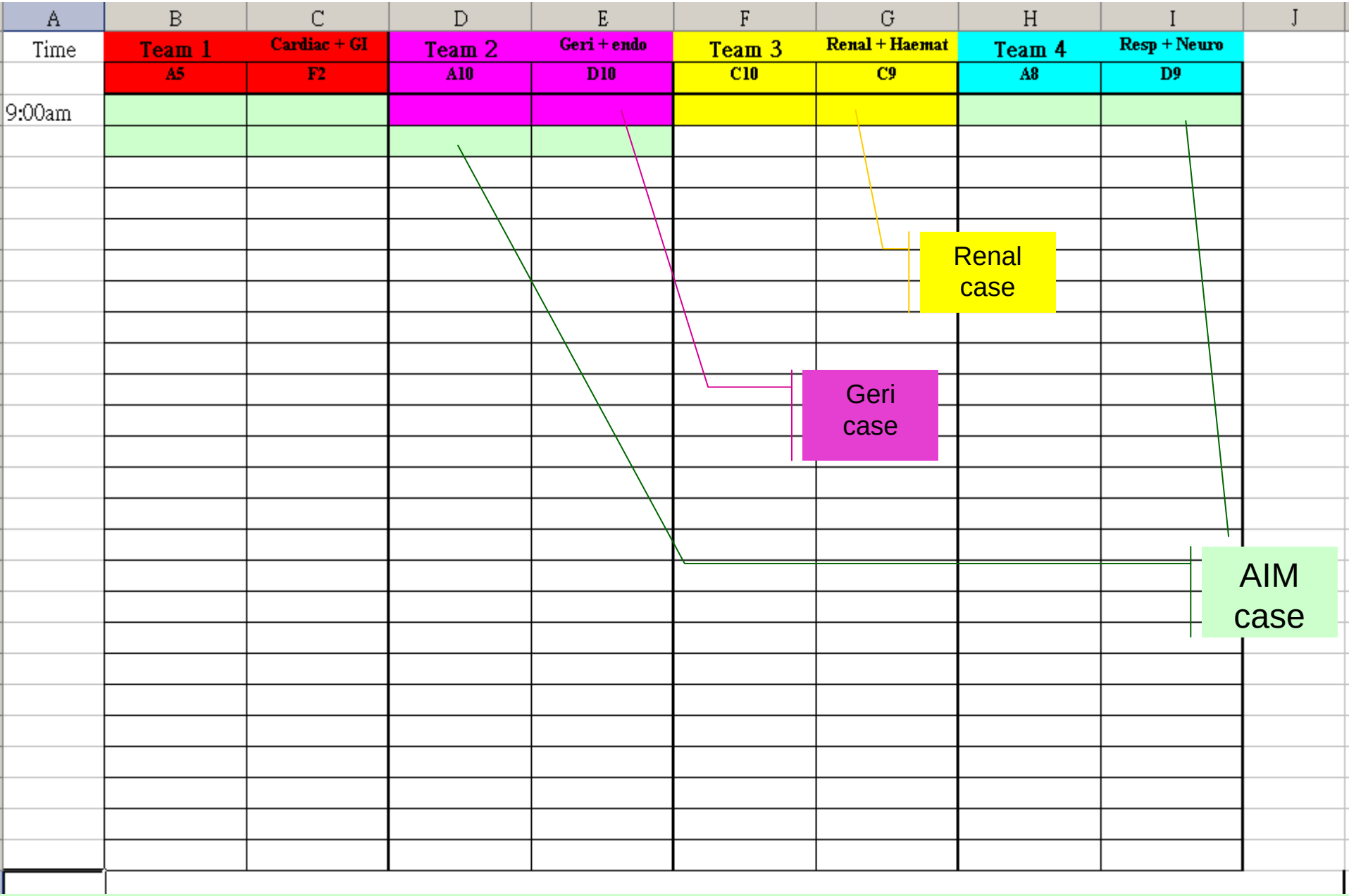
A	B	C	D	E	F	G	H	I	J
Time	Team 1	Cardiac + GI	Team 2	Geri + endo	Team 3	Renal + Haemat	Team 4	Resp + Neuro	
	A5	F2	A10	D10	C10	C9	A8	D9	
9:00am									



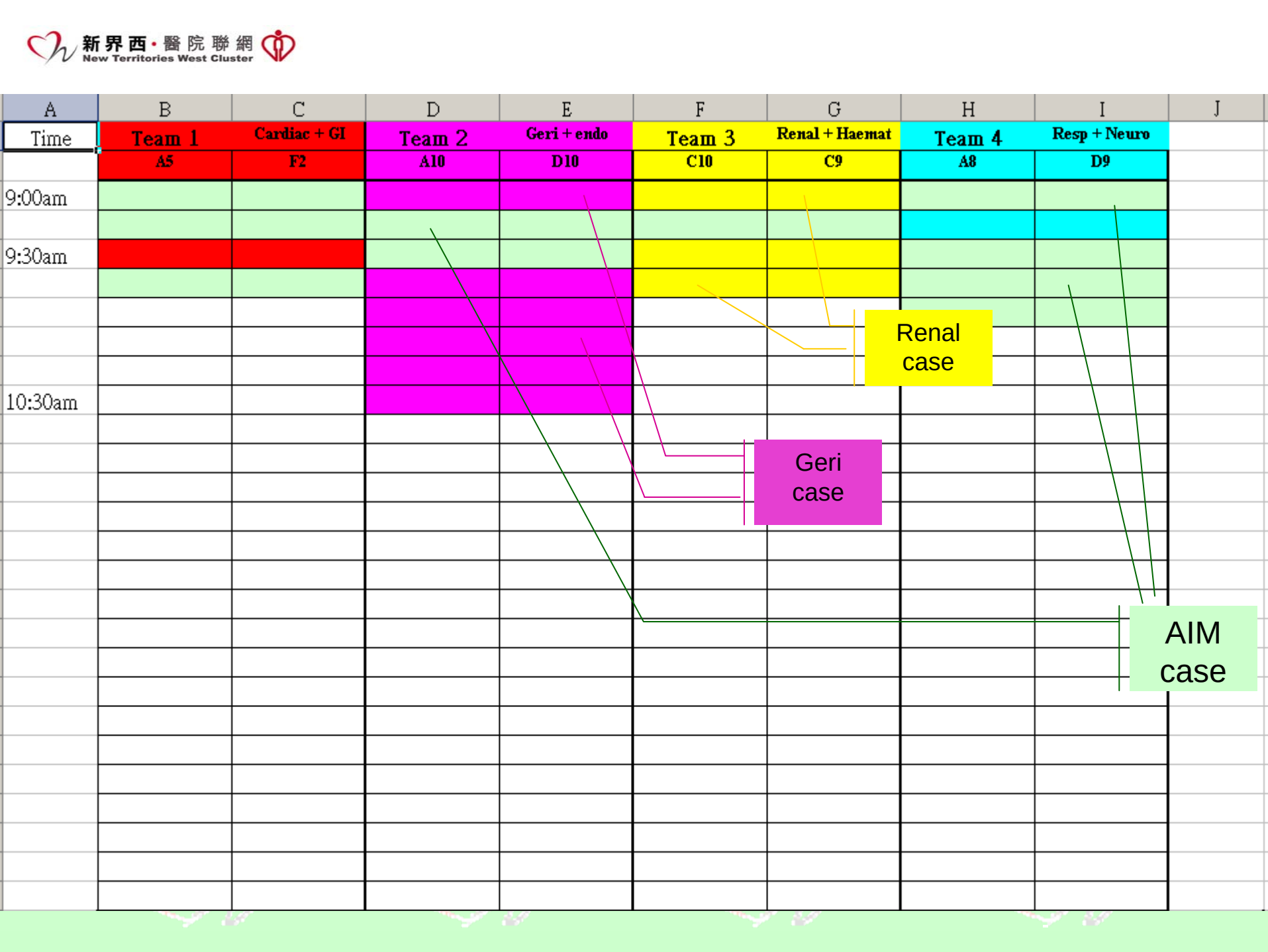
Time	Team 1	Cardiac + GI	Team 2	Geri + endo	Team 3	Renal + Haemat	Team 4	Resp + Neuro
	A5	F2	A10	D10	C10	C9	A8	D9
9:00am								
9:30am								

Renal case

Geri case

AIM case

Time	Team 1	Cardiac + GI	Team 2	Geri + endo	Team 3	Renal + Haemat	Team 4	Resp + Neuro
	A5	F2	A10	D10	C10	C9	A8	D9
9:00am								
9:30am								
10:30am								



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Time	Team 1	Cardiac + GI	Team 2	Geri + endo	Team 3	Renal + Haemat	Team 4	Resp + Neuro
	A5	F2	A10	D10	C10	C9	A8	D9
9:00am								
9:30am								
10:30am								
12:00 noon								

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Time	Team 1	Cardiac + GI	Team 2	Geri + endo	Team 3	Renal + Haemat	Team 4	Resp + Neuro
	A5	F2	A10	D10	C10	C9	A8	D9
9:00am								
9:30am								
10:30am								
12:00 noon								
1500								
2400								

Time frame of transit to Subspecialty-based admission M&G, TMH

Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09
Consultation to medical & nursing staffs; present at department meeting					
	Consultation to A&E + admission office; admission criteria drafting by teams				
		Team allocation 3Q09 according to proposal; review of call duties			
			Admission criteria finalised; nursing ward duties prepared		
				Start by 5/8/09	
					Evaluation after running for 1 month

The implementation started in stages since 5/8/09

Action	Responsible staff
Admission criteria	Team heads
Matching of wards	WM & Team heads
Alignment of team structure	Dr. Leung CK & team heads
Overseeing call duties/OPD duties/ leave etc.	Dr. Lai A / CK Leung/ Mok CK
A&E liason	Mok CK/others
Admission office liasion	Mok CK/ others
Intra-team job allocation: AIM Vs subspecialty	Team heads

Results

Phase 1 (operation within office-hours)

Aug – Dec 09 (5 months)

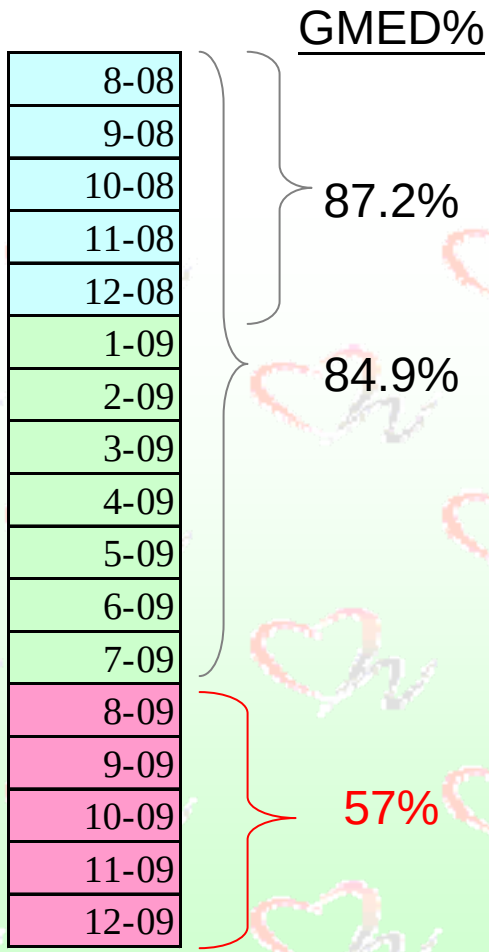
Pre- and post- comparison of the following:

- GMED% – surrogate marker for quality of care
- ALOS – surrogate marker for efficiency of care

Results

GMED%

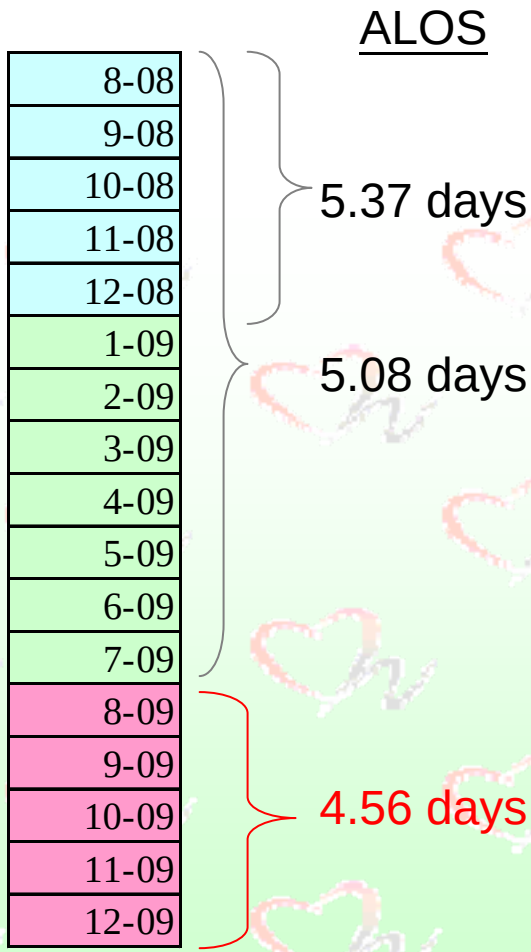
- Post-(Aug09-Dec09)
  - 57.0%
- Pre-(Aug08-Dec08)
  - 87.2%
- Pre-(Aug08-Jul09)
  - 84.9%



Results

ALOS

- Post-(Aug09-Dec09)
  - 4.56 days
- Pre-(Aug08-Dec08)
  - 5.37 days
- Pre-(Aug08-Jul09)
  - 5.08 days



Conclusion

- From the preliminary data of first 5 months, the objectives of the program (better subspecialty matching of patients to doctors) were all achieved
- Both the quality and the efficiency of acute inpatient care of M&G were improved

Thank you!

Q & A

Other related issues

- Staff satisfaction
  - Medical: specialists caring for more specialty patients; more efficient
  - Nursing: less fluctuation in ward admission pressure
- Adjustment of sub-acute/rehabilitation beds to meet subspecialty LOS needs
- Accurate I/O monitoring of M&G inpatient flow

- Full implementation to cover non-office hours
  - Need to solve the hurdle of limited medical manpower at night time