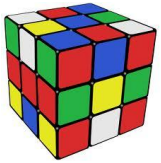
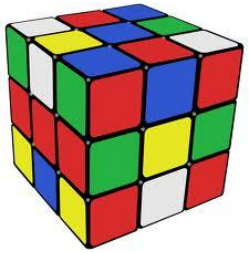
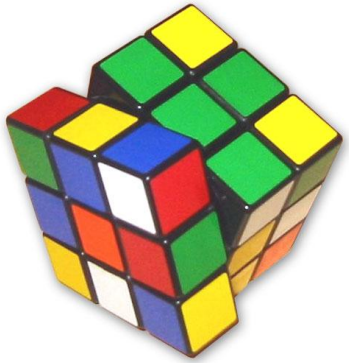
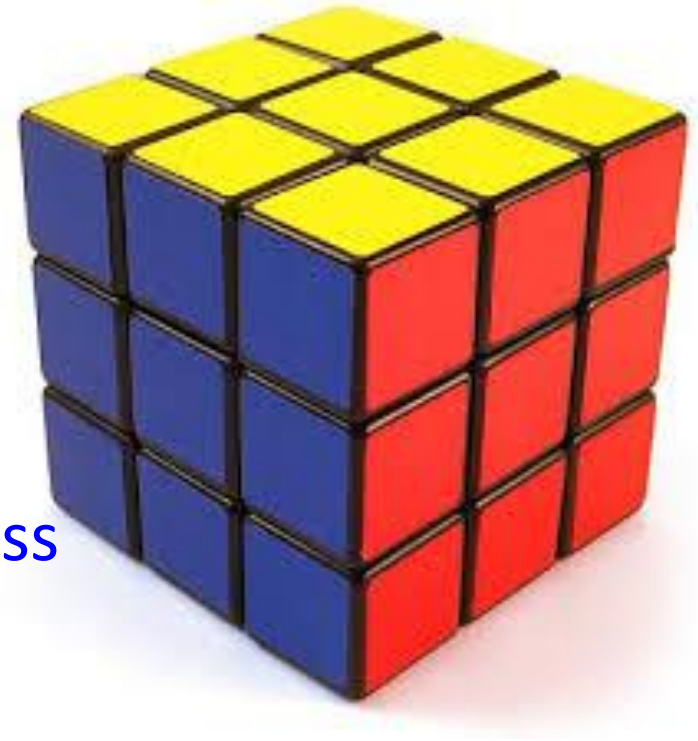
Solving the Rubik's Cube
An approach to ED redesign









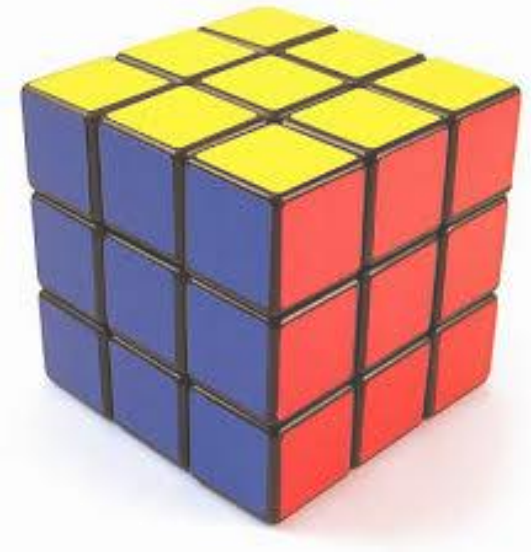
Dr Tim Green
ED Director
RPAH

WOHP Master Class
14/11/13

NSW GOVERNMENT Health
Sydney Local Health District

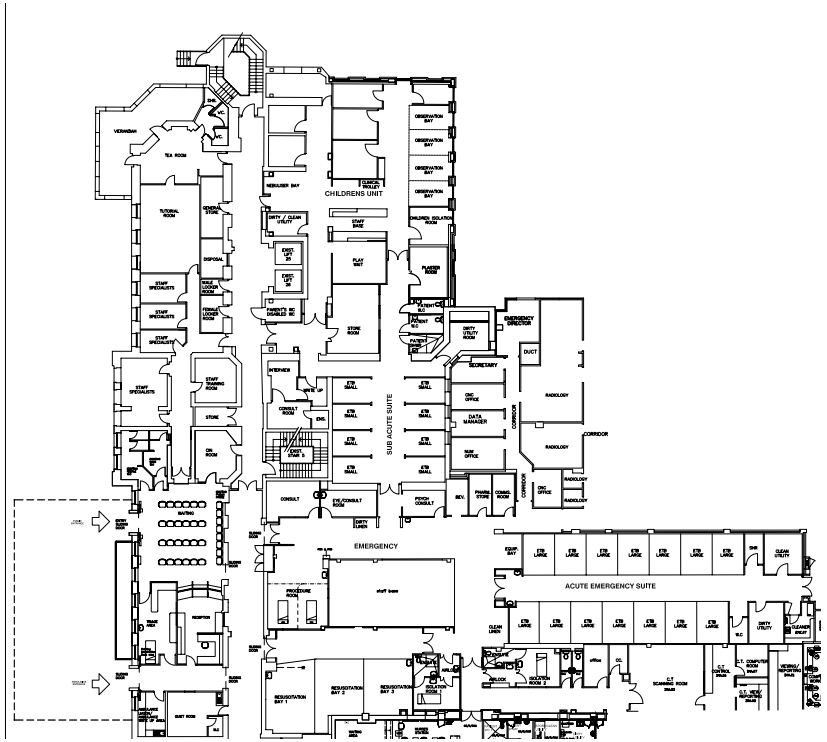
Themes, Teams and Streams

- Senior Early Assessment
- Team Based Care
- Patient Streaming



RPA ED 1996

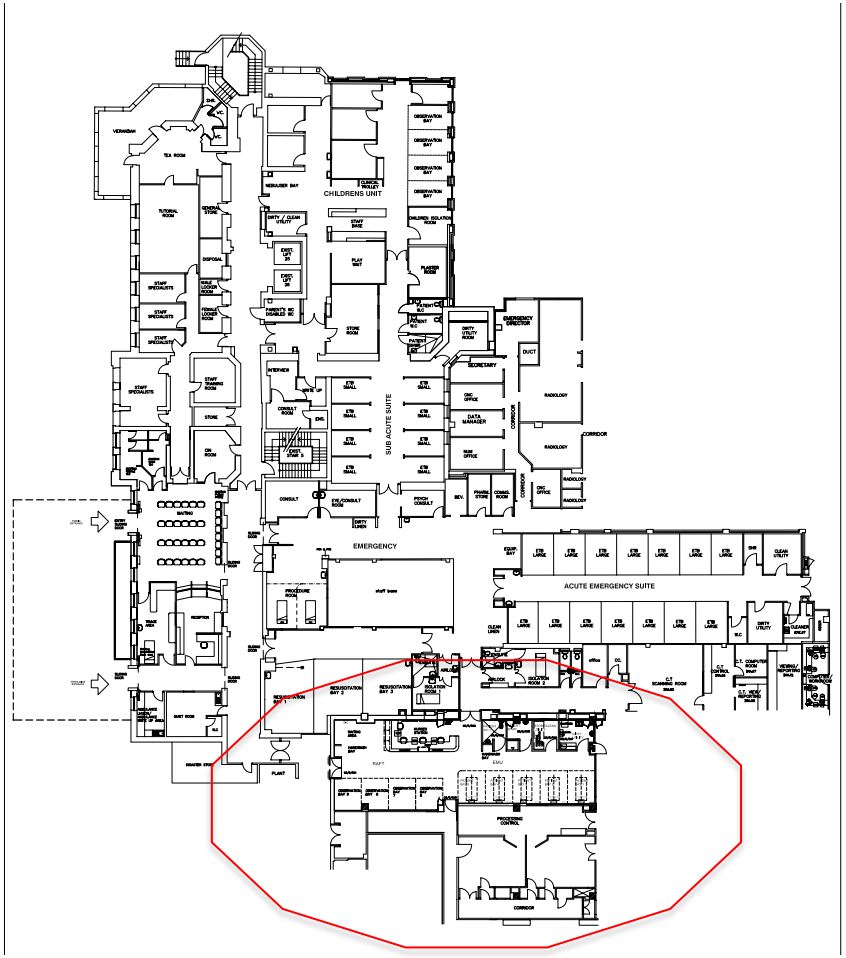
40,000 patients (110/day, 33 admissions)



- 2 Resus Beds
- 1 Isolation Room
- 14 Acute beds
- 10 Sub-Acute Beds
- 27 Adult Beds
- 5 Paediatric Beds
- Minimal consultation/procedure space

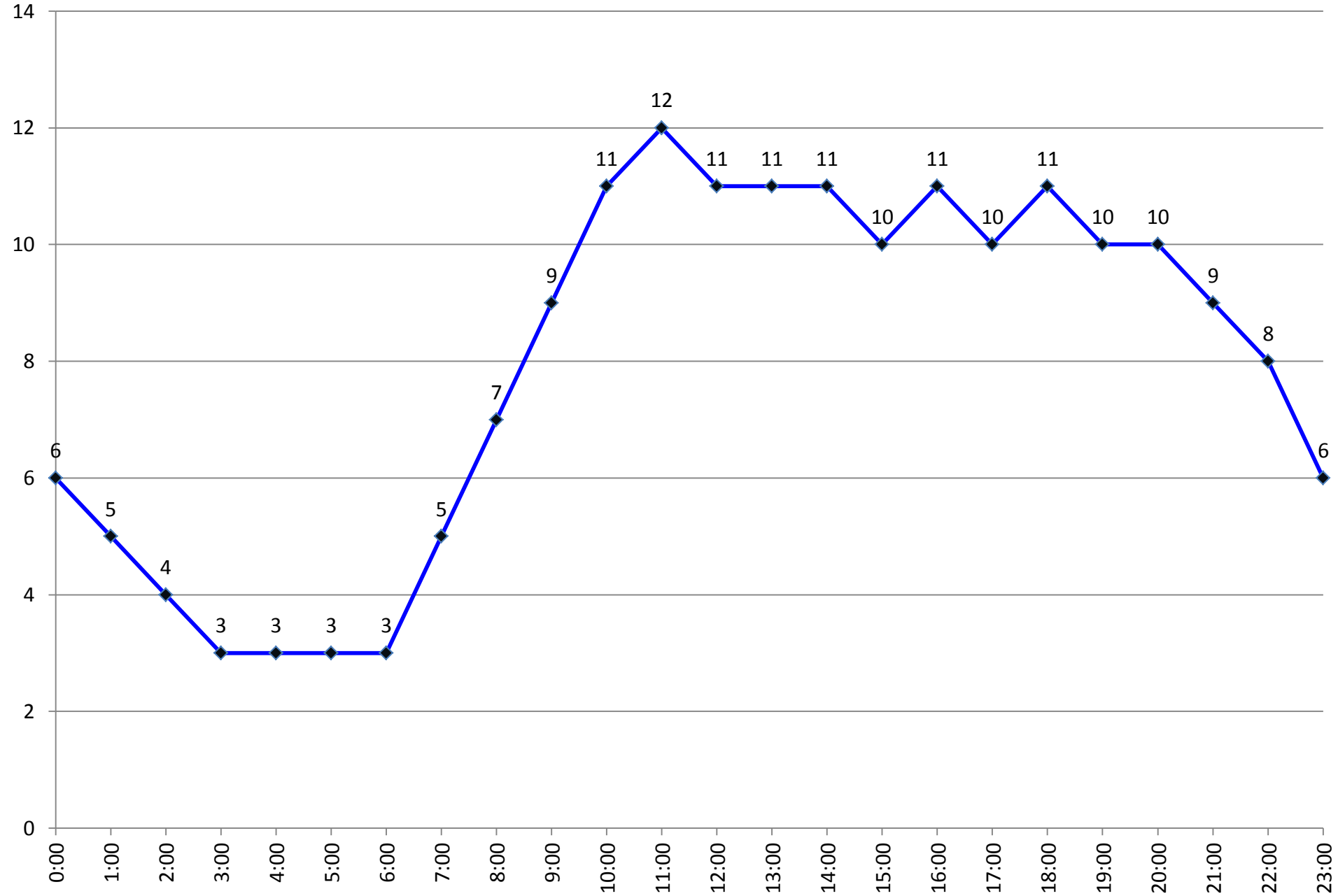
RPA ED 2013

75,000 patients (200/day 60 admissions)

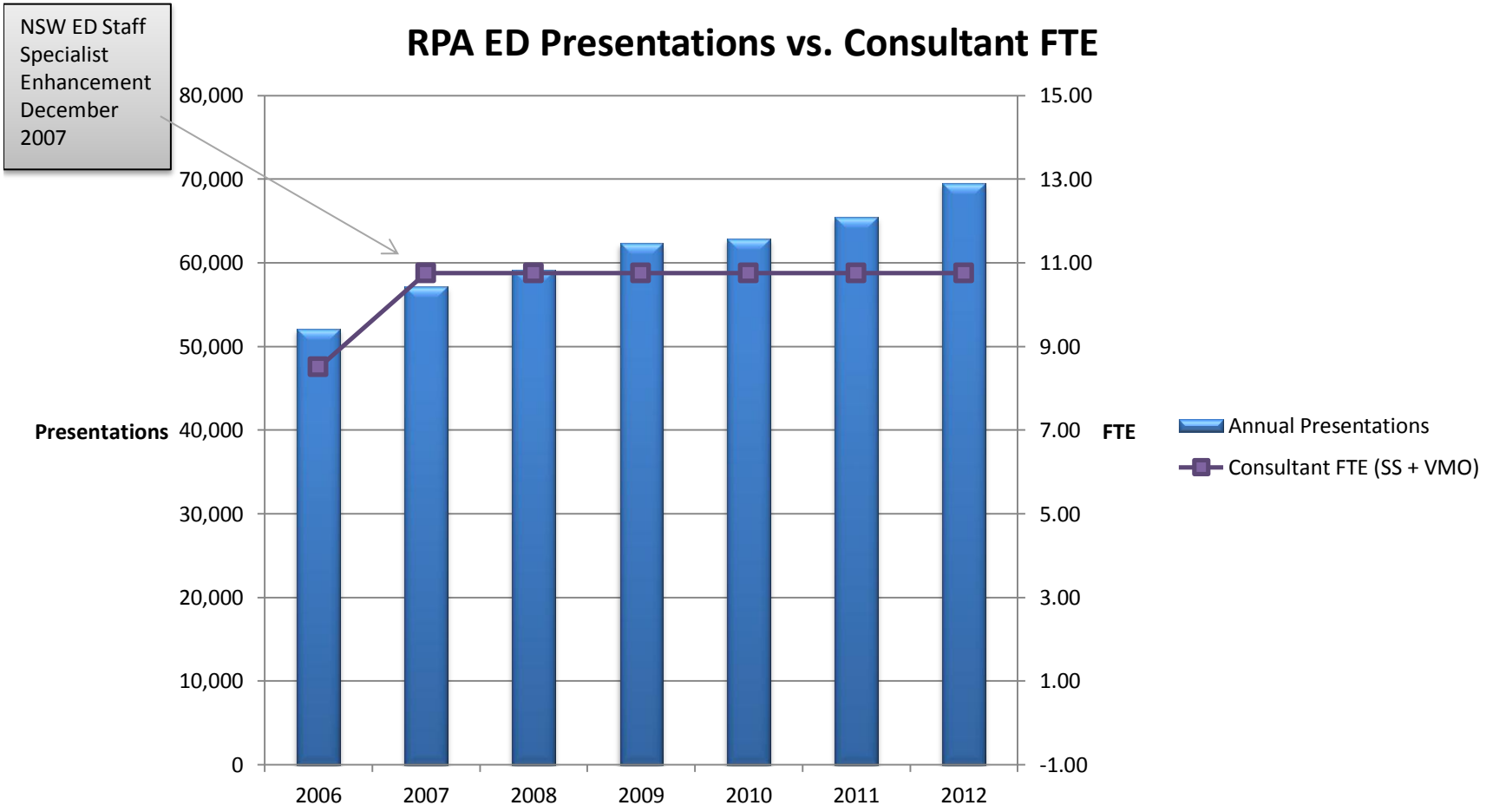


- 3 Resus Beds
- 2 Isolation Rooms
- 14 Acute beds
- 8 Sub Acute Beds
- 27 Adult Beds
- 5 Paediatric Beds
- 4 consultation rooms
- 9 bed EMU/RAFT

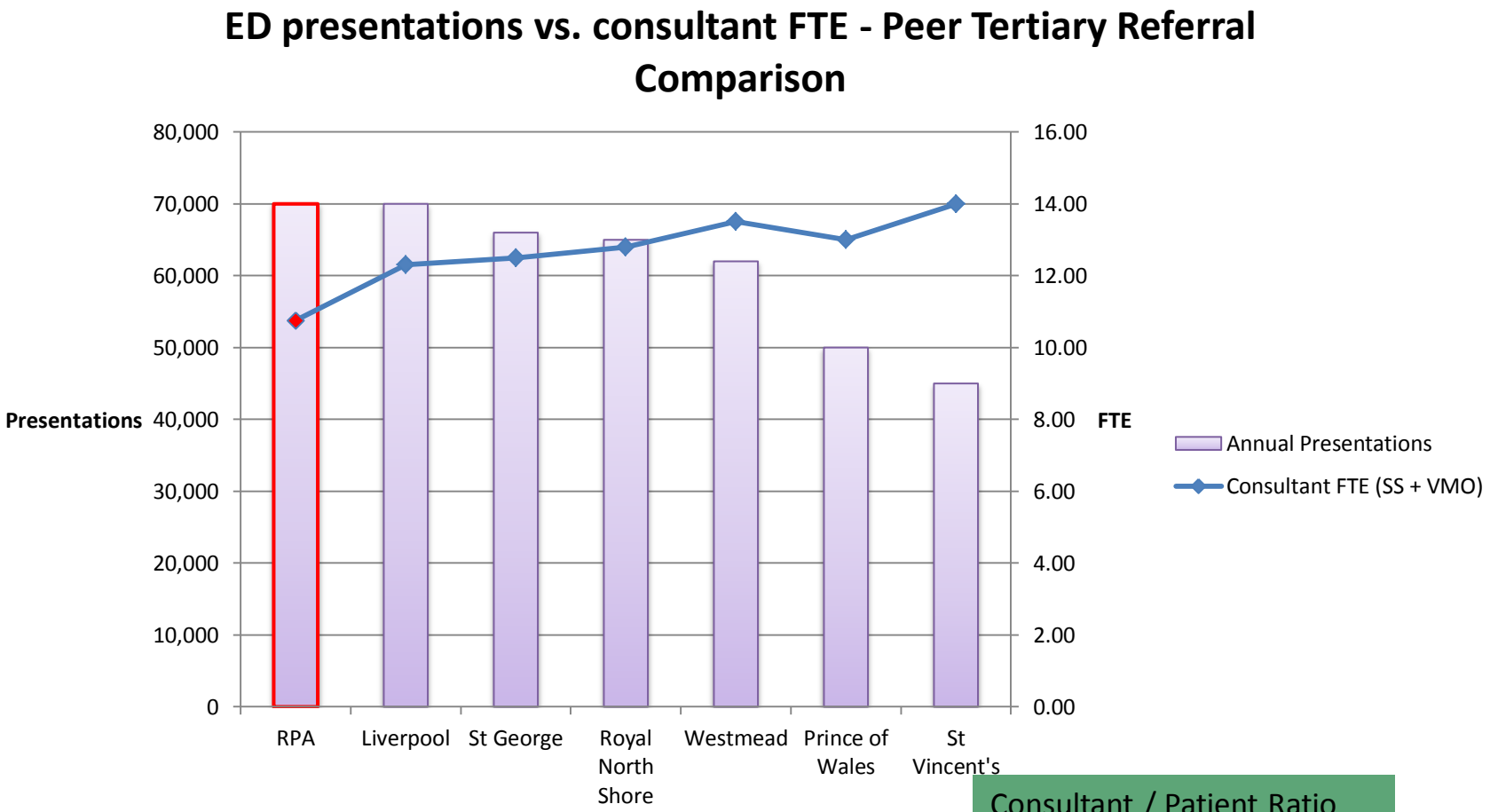
Daily Average ED Presentations by Hour
2012 YTD June



ED Activity and Consultant workforce



Consultant FTE in Peer Sydney EDs



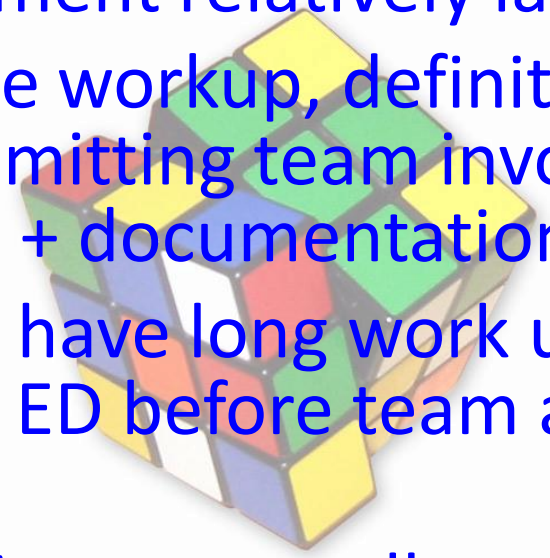
Consultant / Patient Ratio
St V: 1:3214
RPA: 1:6512

The Old ED

- Acute and Resus
- Subacute, Waiting room, Paeds
- EMU and RAFT (Fast Track)
- 2 consultants weekday day shift
- Evening and weekend shifts always had 1 consultant and 2 approx. 50% of time
- Increasing numbers of interns…up to 4 per shift.

The Old ED

- JMO sees patient first and commences work up.
- Senior involvement relatively late.
- Comprehensive workup, definitive diagnosis and plan before admitting team involved (investigations + documentation)
- Many patients have long work ups / period of observation in ED before team acceptance or going home.
- Long waiting times generally not infrequently 20 or more unseen patients handed over to night staff.

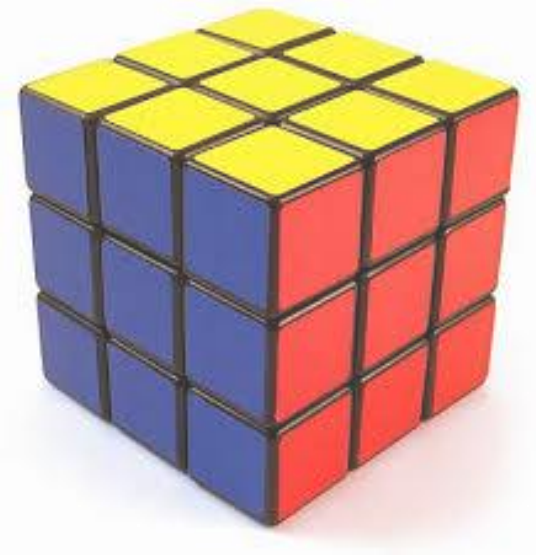


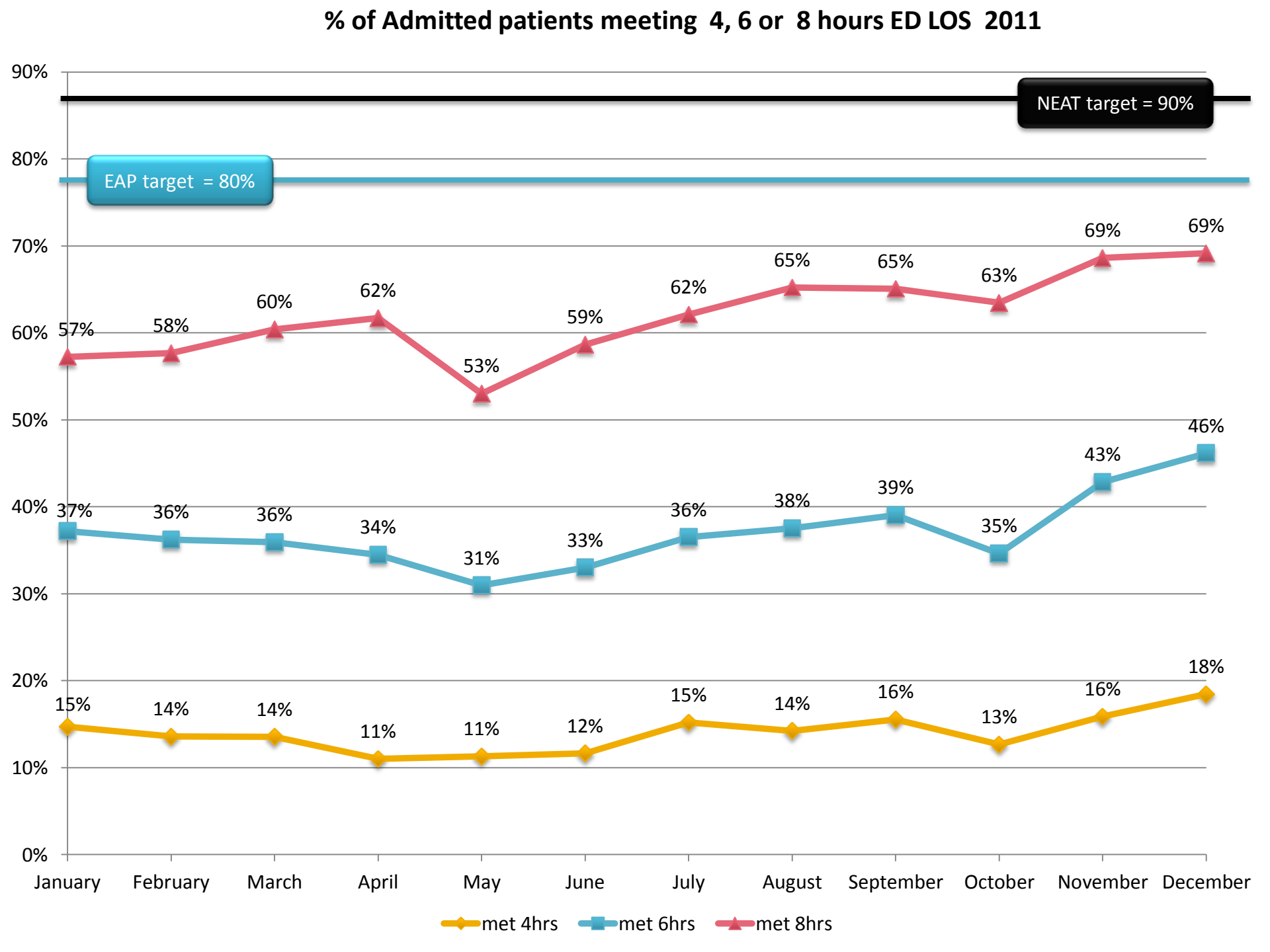
NEAT performance

(2013 target =71%)

	2011	2012	2013
Non Admitted	55	60	66
Admitted	13	16	27 *
Total	42	48	55

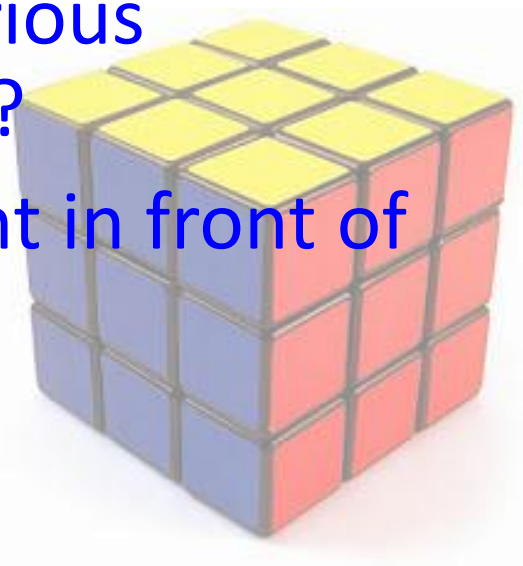
* EMU effect- NEAT for EMU admissions up to 60%




% of Admitted patients meeting 4, 6 or 8 hours ED LOS 2011
NEAT target = 90%
EAP target = 80%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
January
February
March
April
May
June
July
August
September
October
November
December
57%
58%
60%
62%
53%
59%
62%
65%
65%
63%
69%
69%
37%
36%
36%
34%
31%
33%
36%
38%
39%
35%
43%
46%
15%
14%
14%
11%
11%
12%
15%
14%
16%
13%
16%
18%
met 4hrs
met 6hrs
met 8hrs

Obstacles to Change

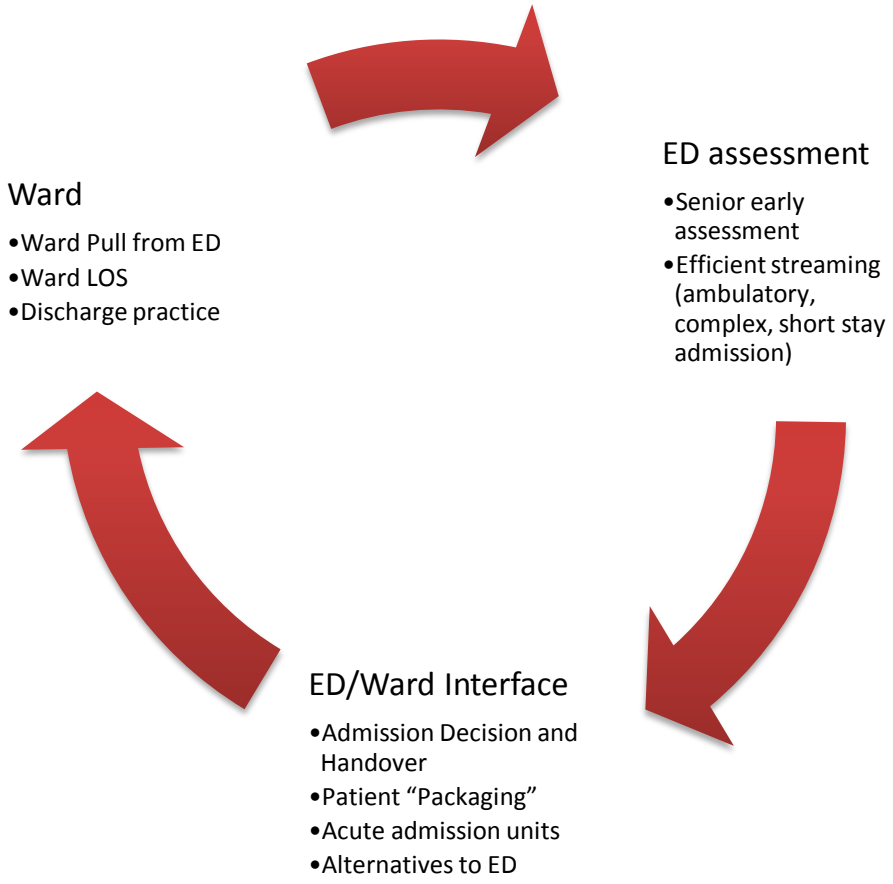
- What is the rest of the hospital doing about NEAT?
- Give us more staff and more beds and we can get it sorted
- Do we have enough senior decision makers and other resources to make a serious attempt at altering models of care?
- “All I can do is look after the patient in front of me”



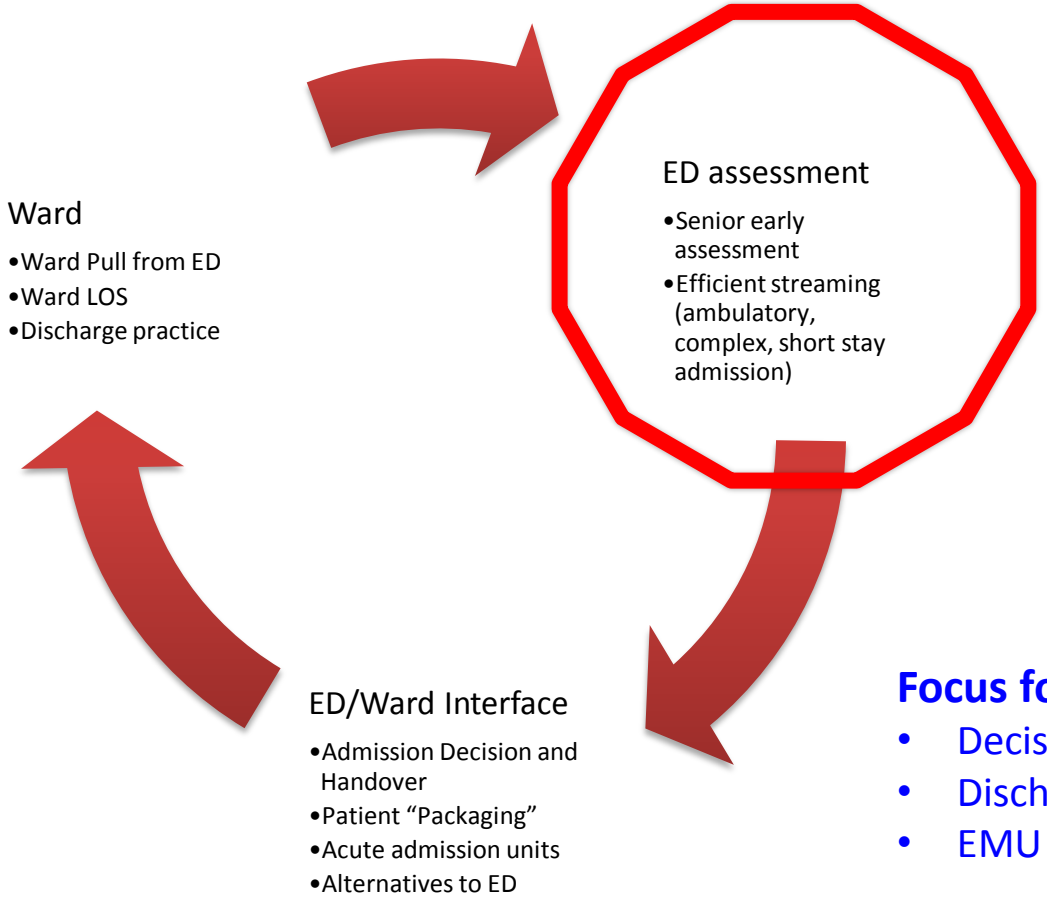
Our current models of care are un-sustainable.

NEAT target or not we have to do things differently

Whole of Hospital Challenges



Whole of Hospital Challenges

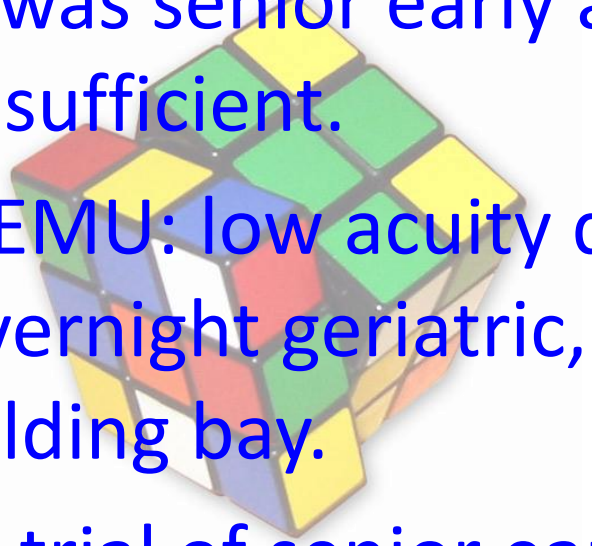


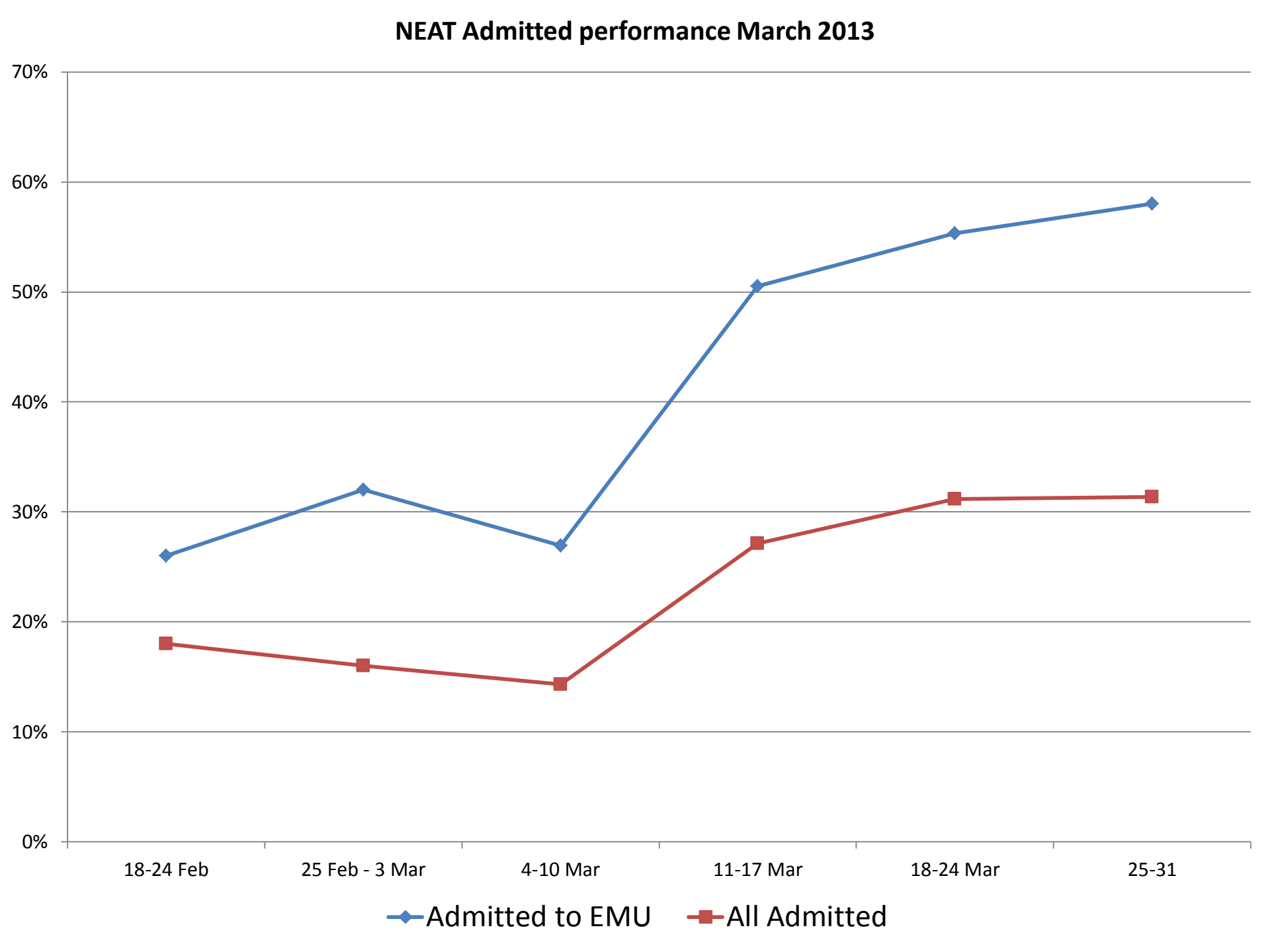
Focus for ED staff:

- Decision making
- Discharge NEAT
- EMU Neat

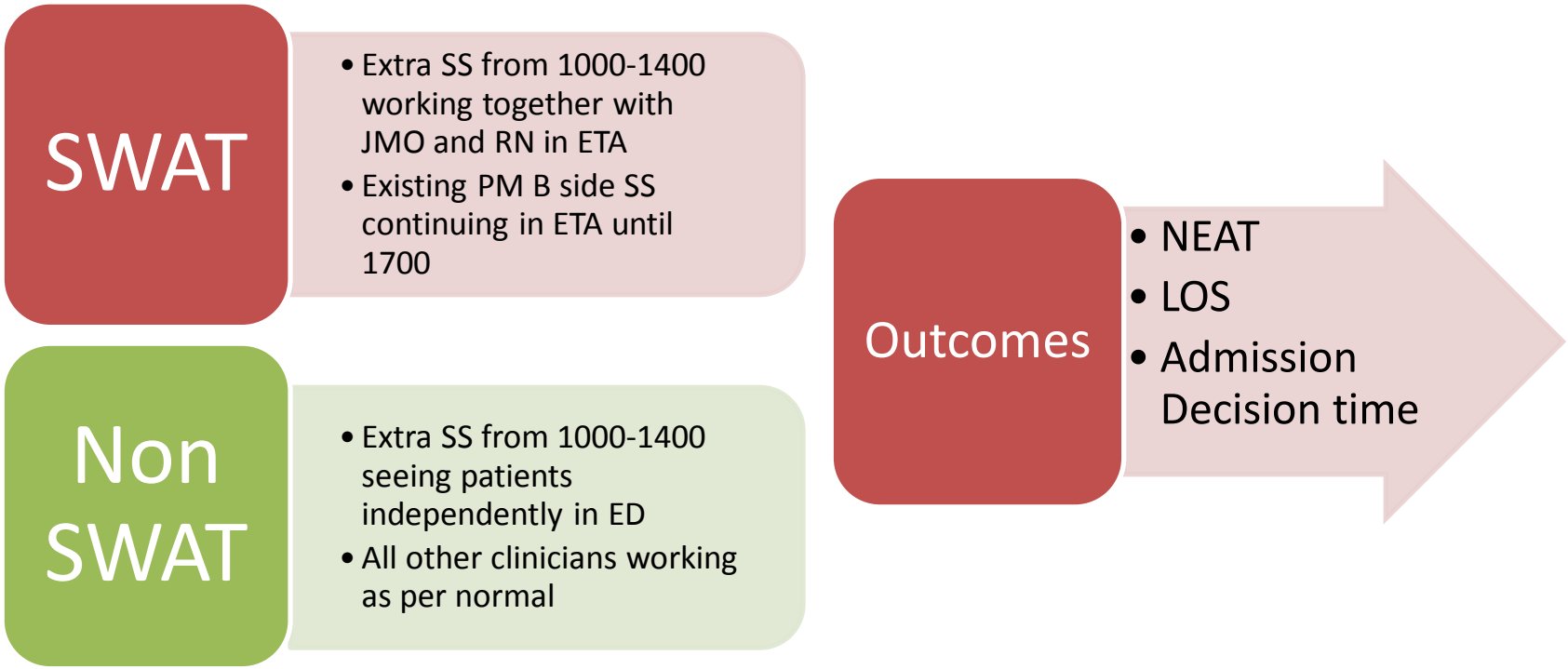
Initial strategies

- Whole of Hospital NEAT project: identified key to ED change was senior early assessment, but current FTE insufficient.
- Utilisation of EMU: low acuity discharge lounge and overnight geriatric, alcoholic & psychiatric holding bay.
- Opportunistic trial of senior early assessment, adapting Westmead model




NEAT Admitted performance March 2013
70%
60%
50%
40%
30%
20%
10%
0%
18-24 Feb
25 Feb - 3 Mar
4-10 Mar
11-17 Mar
18-24 Mar
25-31
Admitted to EMU
All Admitted

SWAT study



Also compared SWAT and Non-SWAT to days of standard cover

Results

	Non-SWAT N=568	SWAT N=647	P value
NEAT (%, 95% CI)			
Overall	41 (37-45)	48 (44-51)	0.03
Discharged	53 (48-58)	64 (59-68)	0.002
Admitted	21 (16-27)	22 (18-28)	0.70
LOS (minutes, IQR)			
Overall	269 (189-376)	261 (171-386)	0.69
Discharged	234 (167-309)	206 (140-294)	0.003
Admitted	367 (253-490)	374 (273-494)	0.51
Admission Decision time	232 (158-310)	209 (131-301)	0.0007

SWAT study results

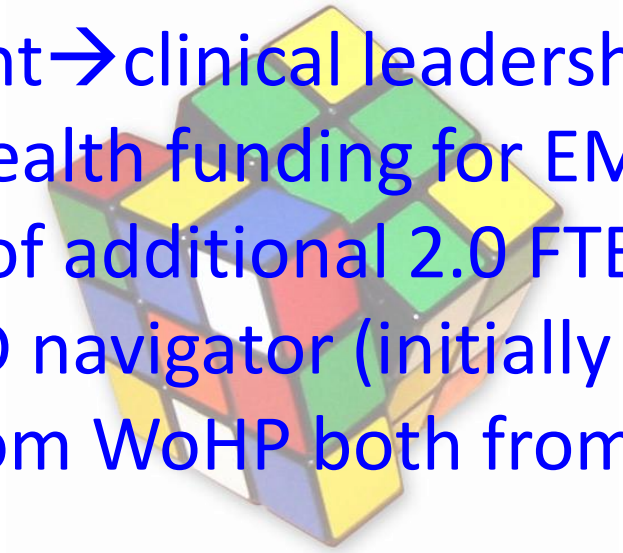
- Discharged patients
  - 11% improvement in NEAT
  - 28 minute decrease in LOS for all patients who presents when SWAT in operation
  - LOS on 50 patients =25 hours (~1 bed)
- Admitted patients
  - No change in NEAT or LOS
  - Improvement of 23 minutes in ED decision time.
- No improvement in NEAT or LOS when extra consultant but no change in model of care.

Major lessons

- Senior early assessment utilising a team approach is effective at decreasing length of stay, improving NEAT and is attractive for junior and senior staff.
- Simply adding additional staff to existing model of care is not necessarily the solution.
- More ED staff and more hospital beds are probably necessary, but alone won't solve the problem.
- Senior early assessment is an effective model, but requires adequate numbers of senior staff.
- Junior staff like working closely with consultants to see more patients with greater supervision and teaching.

Next Steps

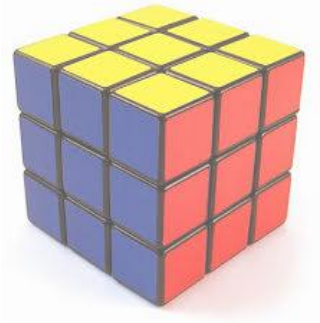
- ED Director and NUM invited to join study tour to WA.
- Ah ha moment→clinical leadership and vision
- Ministry of Health funding for EMU monitors
- LHD funding of additional 2.0 FTE ED consultants.
- Funding of ED navigator (initially 1, then 2 shifts)
- Assistance from WoHP both from MOH and locally.
- Engagement with key stakeholders in hospital and ED with consistent messages



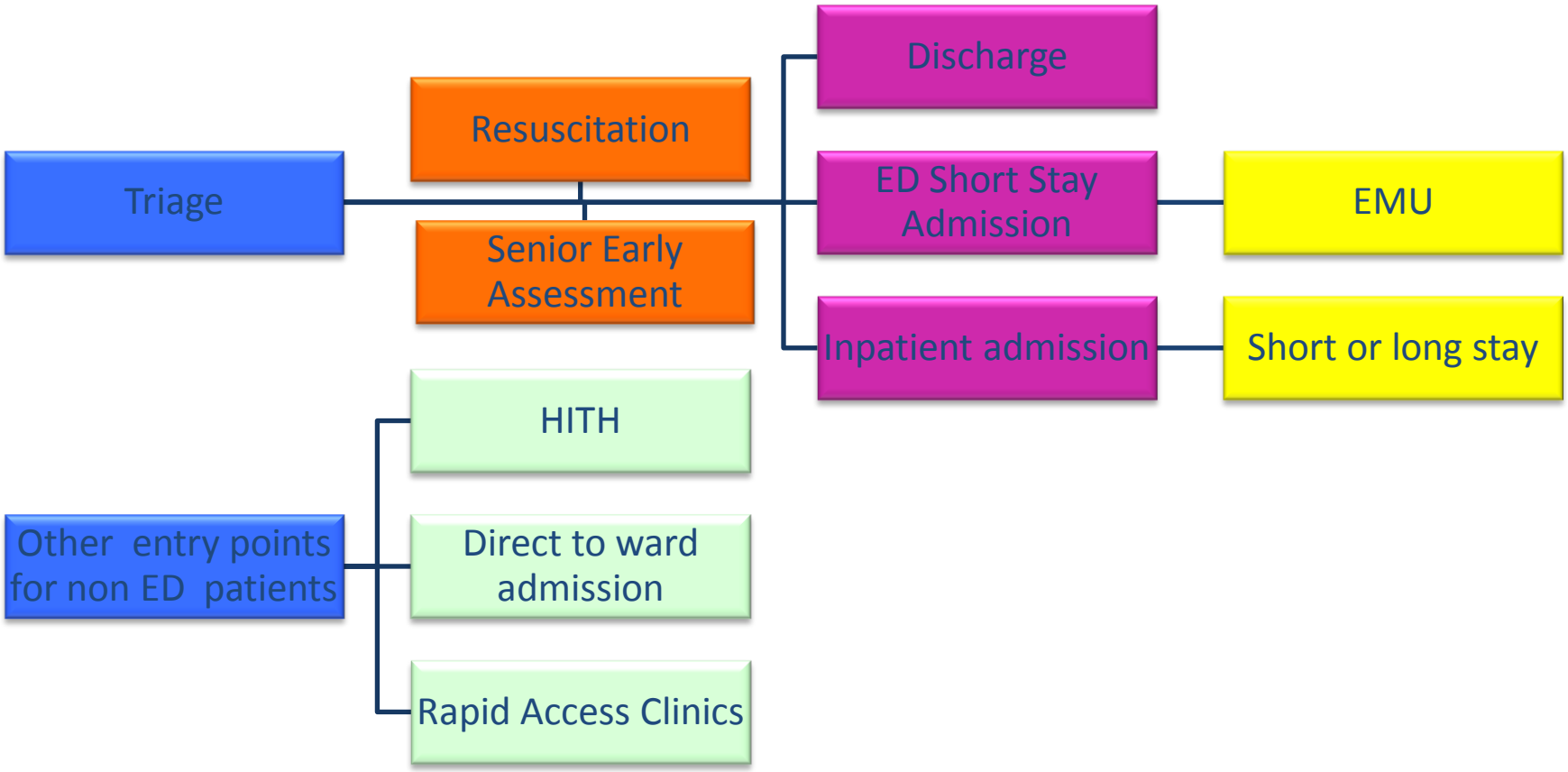
Why a 4 hour target?

- **ED Overcrowding is Bad**
- For my patients
- For your patients
- For our patients

- 4 hours may or may not be ideal but is seen as a driver for much needed hospital wide reform.
- **Focus is on patient care rather than the target alone**

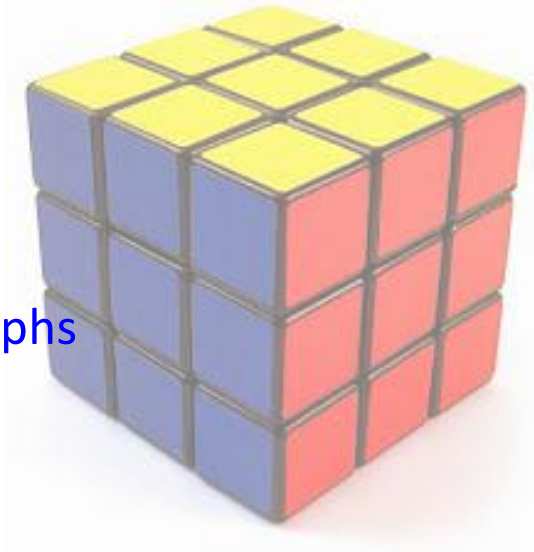


The New ED


Triage
Resuscitation
Senior Early Assessment
Discharge
ED Short Stay Admission
Inpatient admission
EMU
Short or long stay
Other entry points for non ED patients
HITH
Direct to ward admission
Rapid Access Clinics

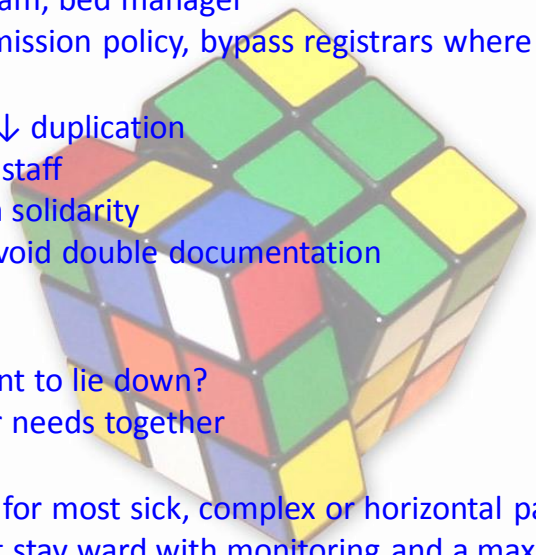
Developing new models of care

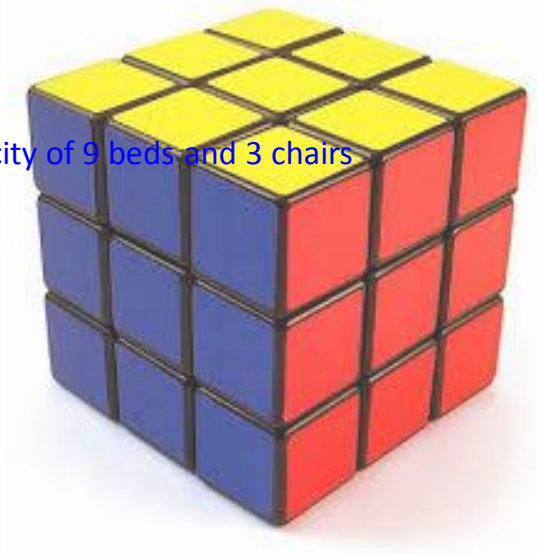
- Data collection and modeling
- Brain storming
- Borrowing /stealing /adapting
  - RNS, St Vincent's, WA
- Timeline study
- Communication, education, branding and promotion.
  - Senior medical staff
  - Registrars and JMOs
  - Nursing Staff
  - Hospital Executive
  - Hospital inpatient clinicians
  - Signage, newsletters, senior staff on duty photographs



New Principles

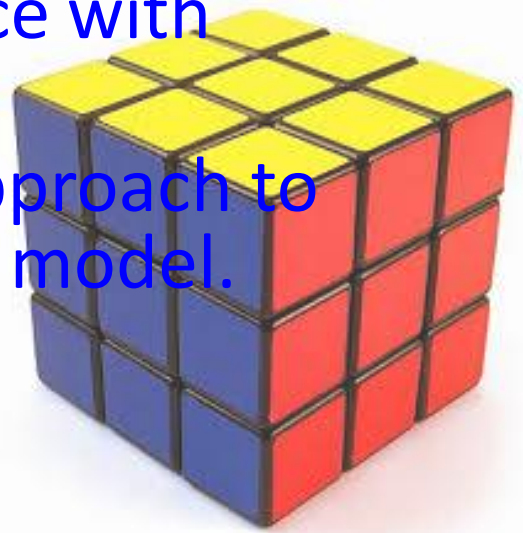
- **Senior early assessment**
  - Early decision making: all patients seen within 30 minutes
  - Avoid unnecessary investigations
  - Early referral to inpatient team, bed manager
  - Ensure compliance with admission policy, bypass registrars where possible or necessary
- **Joint assessment**
  - Consultant, JMO, Nurse -> ↓ duplication
  - Better supervision of junior staff
  - Encourage team work, team solidarity
  - Succinct documentation / avoid double documentation
- **Horizontal vs. Vertical Patients**
  - Every bed is sacred
  - Does this patient need / want to lie down?
  - Stream patients with similar needs together
- **Optimal Use of all parts of ED**
  - Acute as the portal of entry for most sick, complex or horizontal patients
  - EMU a dedicated 24/7 short stay ward with monitoring and a maximum capacity of 9 beds and 3 chairs when nursing staff appropriate. Will open as an 8 bed unit.
  - RAFT relocated to old subacute
  - ETA as “internal waiting room” but appropriate for IV Rx to begin.
- **ED Navigator**
  - Air traffic controller of the ED to make sure all patients land safely.





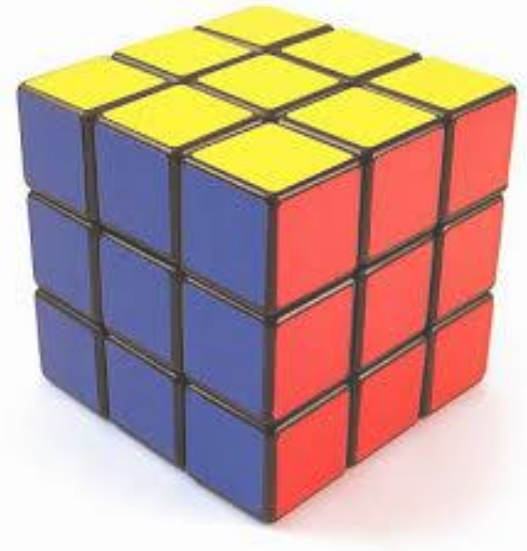
Why Senior Early Assessment?

- SWAT study showed 10% improvement in NEAT and decreased LOC of 30min.
- Early admission decision and essential investigations, provided by most senior staff member possible.
- Early referral to inpatient teams
- Improved ability to ensure compliance with Admission Policy
- JMOs see more patients and learn approach to senior decision making in apprentice model.



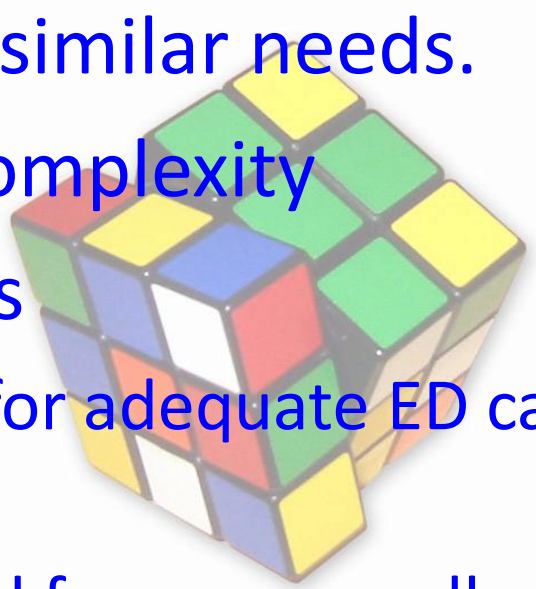
Why Team Based Care?

- Clear medical ownership of patients from triage.
- Ensure consistent workload from all staff
- Junior and senior medical staff work closely together
- Better supervision of juniors.
- Appropriate investigations early
- Early plan and decision making
- Team bonding, competition, pride
- It has worked in other similar EDs



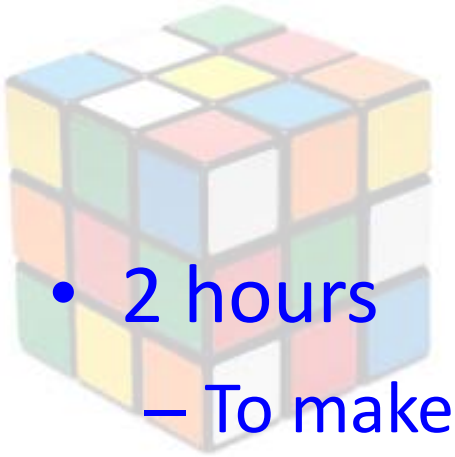
Why Patient Streaming?

- More efficient to assess, nurse and manage patients with similar needs.
- Age, acuity, complexity
- Physical needs
  - need a bed for adequate ED care (horizontal patients)
  - can be seated for some or all of their ED stay (vertical patients).



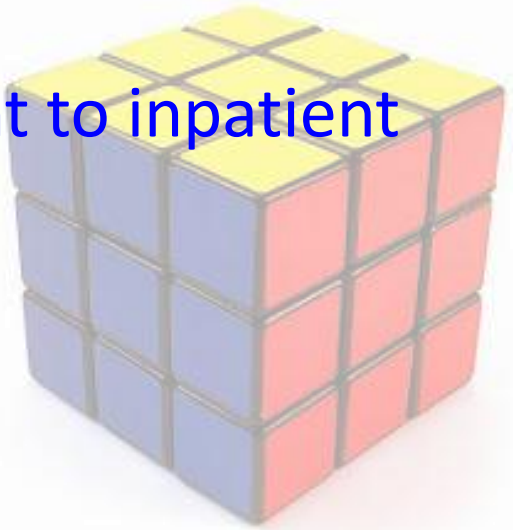
The New ED Timeline

- **0-15 minutes** -Patients triaged and placed in a bed, ETA or RAFT chair
- **30 minutes** -Patients seen within their triage category wait time. Patient has had an initial senior assessment, investigations ordered and referral commenced where required. Initial disposition plan made and patient admitted to EMU where indicated.
- **120 minutes** -Patients have a management plan and provisional diagnosis, referrals have been made where needed and final disposition plan (home, ward or EMU) has been made.
- **180 minutes** -Admission complete including AMO/registrar aware of admission in accordance with hospital admission policy. Inpatient bed booked where required.
- **240 minutes** -Discharge of patient or transfer to a ward completed.

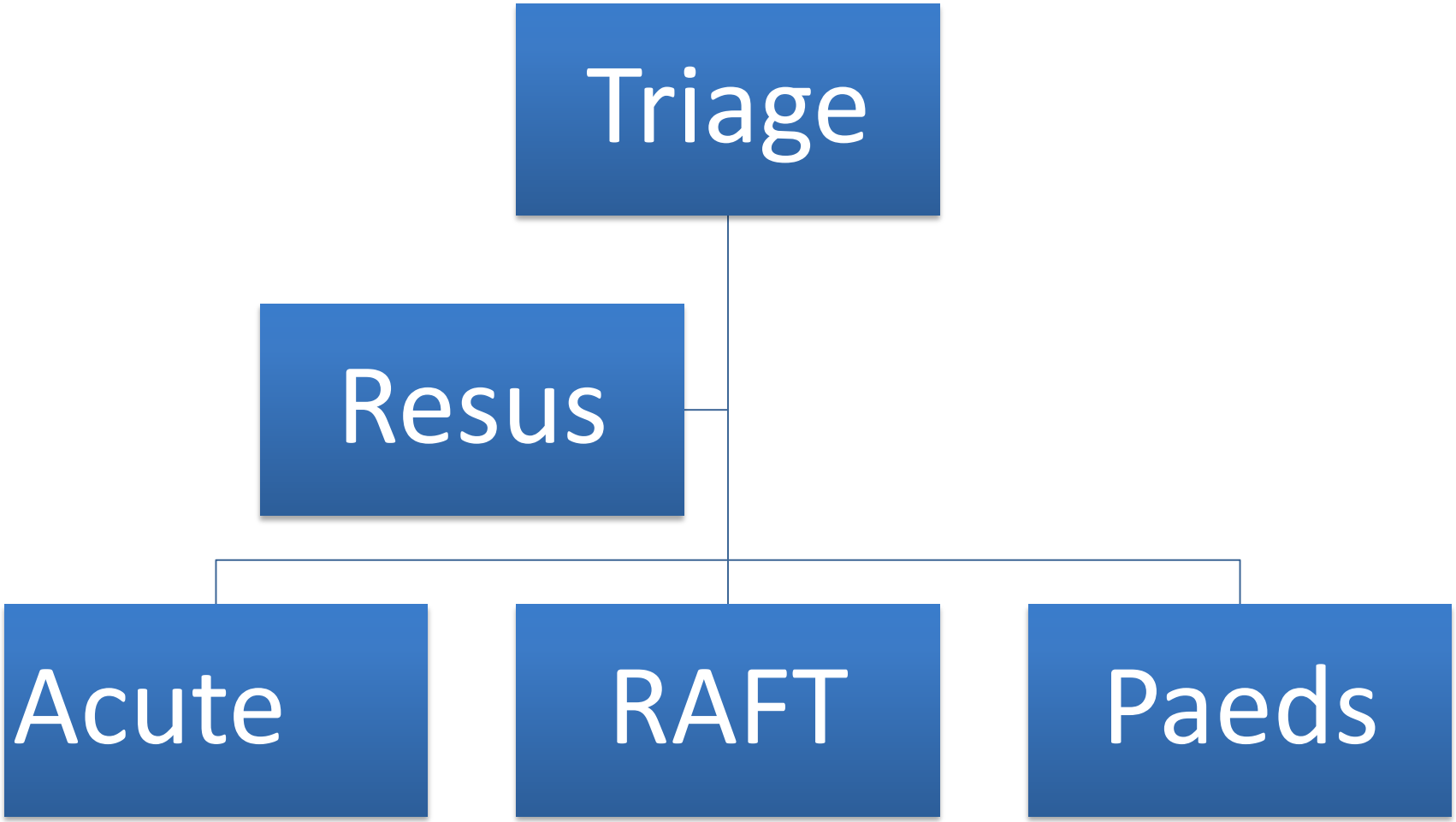


NEAT 2:1:1

- 2 hours
  - To make a disposition decision
  - Request to consult if required
  - Request for bed
- 1 hour
  - To communicate / consult
  - To find, handover and transfer patient to inpatient bed.

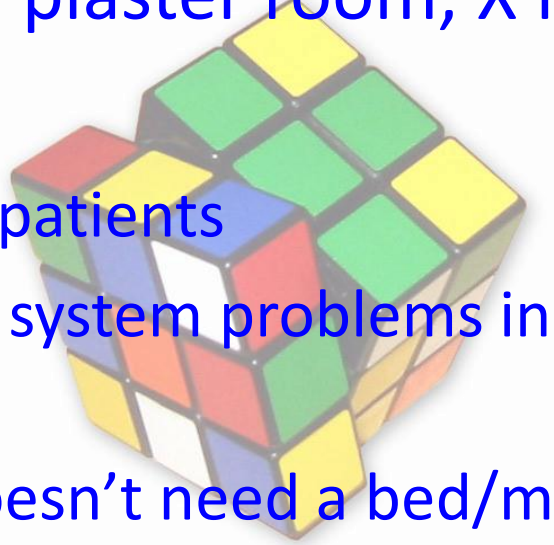


The New ED



The New RAFT

- RAFT relocated to subacute with close access to consult rooms, plaster room, X ray, slit lamp etc.
- Patients
  - Existing RAFT patients
  - Simple, single system problems in patients without comorbidities
  - Psych (that doesn't need a bed/monitoring)
- SWAT model with JMO (for both RAFT and Paed patients)

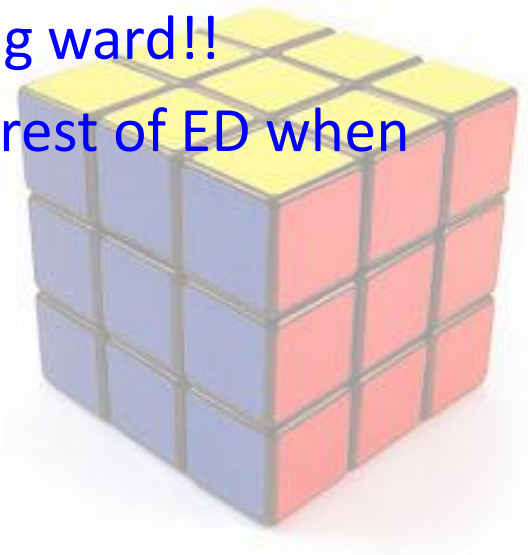


The New EMU

- 12 patient unit 24/7
  - 9 beds
  - 3 chairs
- (currently only 2 nurses will limit EMU capacity to 8 patients)
- 5 monitored beds
- Aim is to be able to manage patients of a similar acuity to acute.
- Early identification of patients **not likely** to need inpatient admission but will take some time to sort to go straight to EMU
- Length of Stay likely to be 4-24 hours.

The New EMU

- Medically staffed by acute teams with continuity of care.
- Still consultant decision to admit to EMU
- Abolish the phrase “failed EMU”
- Every patient admitted to EMU within 4 hours is a success.
- Expectation is that 80% of EMU patients will be discharged within 24 hours, the rest admitted under an inpatient team.
- **Not** a cardiology/toxicology/psychiatric holding ward!!
- **Must** have same priority for bed managers as rest of ED when EMU patients require inpatient admission.



Medical Staff Changes

- Enhancement: 2.0 FTE consultants
- Minimum 2 consultants 16 hours / day seven days a week
- 2 acute teams (supervised by 1 consultant)
- 1 RAFT / Paeds team (supervised by 1 consultant)
- Intern / RMOs change to 10 hour shift, and start evening shift earlier
  - 7 rather than 8 shifts per day
- Paediatric Night RMO confirmed for 2014

Day Shift 0800-1800hrs

Acute, Resus, Iso, EMU

- Specialist
- Reg
- Reg
- RMO
- SRMO
- Intern
- Intern

RAFT, Paediatrics, WR

- Specialist
- SRMO
- Intern
- ED Physio
- CIN Nurse

Evening Shift 1400-2400hrs

Acute, Resus, Iso, EMU

- Specialist
- Reg
- Reg
- SRMO
- SRMO
- Intern
- RMO

RAFT, Paediatrics, WR

- Reg 1200-2200
- Specialist 1400-2400
- Intern 1400-2400
- SRMO 1600-0200
- CIN Nurse
- Evening Paeds RMO

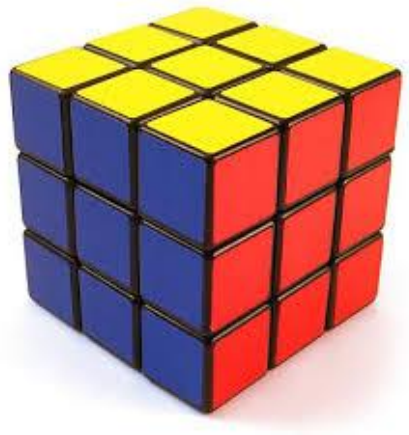
Night Shift 2300-0900hrs

Acute, Resus, Iso, EMU

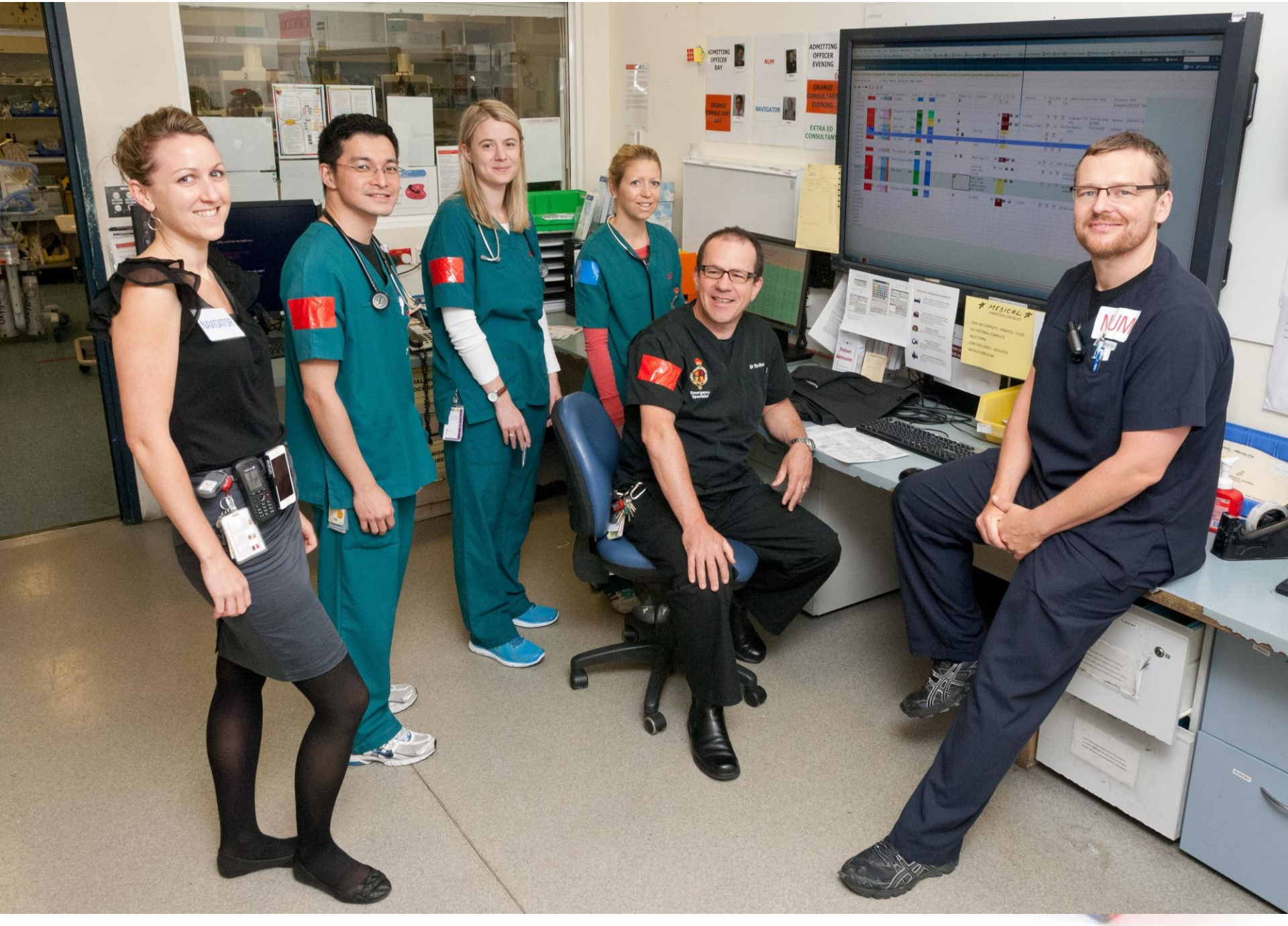
- Reg
- SRMO
- RMO

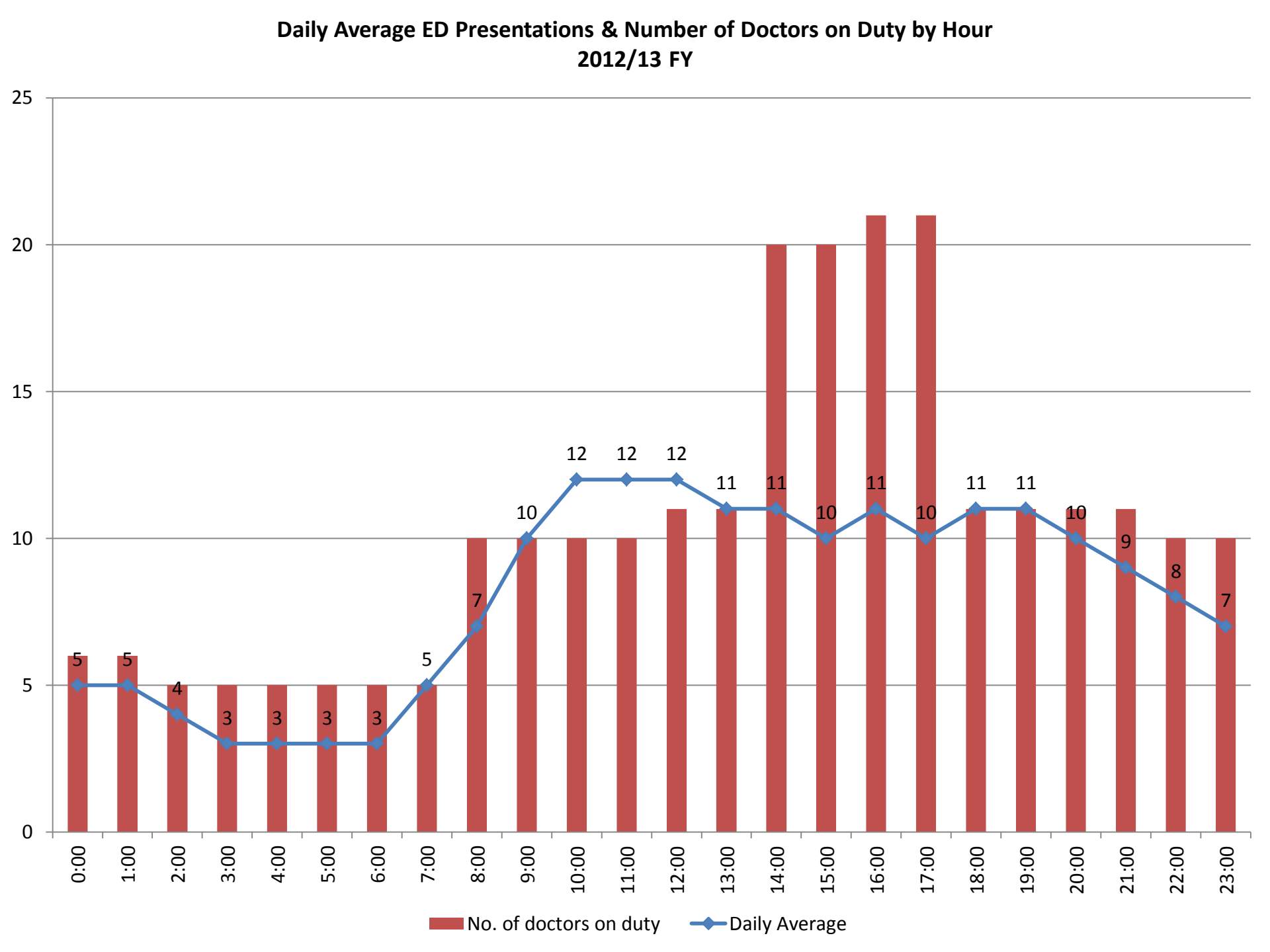
RAFT, Paediatrics, WR

- Reg
- RMO
- Night Paeds RMO



Team identification


ADMITTING OFFICER DAY
NUM
ADMITTING OFFICER EVENING
ORANGE CONSULTANT DAY
NAVIGATOR
ORANGE CONSULTANT EVENING
EXTRA ED CONSULTANT
NAVIGATOR
MEDICAL
NUM


Daily Average ED Presentations & Number of Doctors on Duty by Hour
2012/13 FY
25
20
15
10
5
0
5 5 4 3 3 3 3 5 7 10 12 12 12 11 11 10 11 10 11 11 10 9 8 7
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
No. of doctors on duty
Daily Average

Senior Early Decision Making in Acute

1) Probable admission to inpatient team.

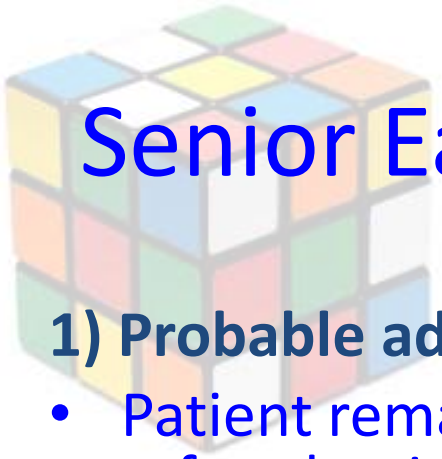
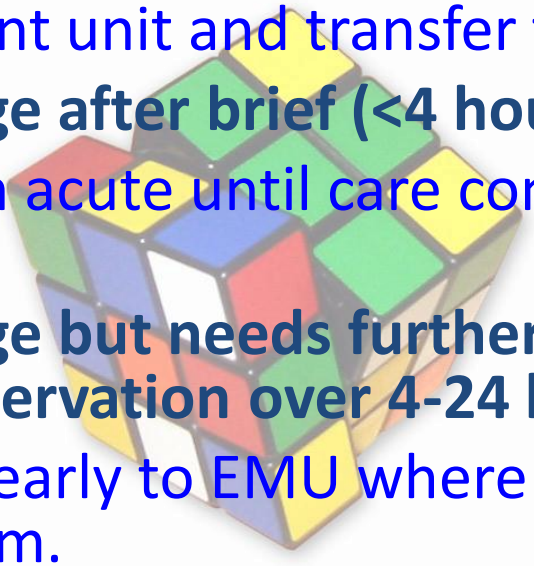
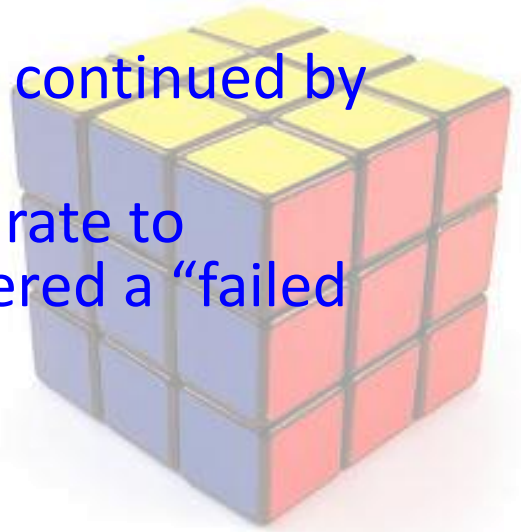
- Patient remains in acute, work up completed and early referral to inpatient unit and transfer to inpatient ward.

2) Probable discharge after brief (<4 hour) stay

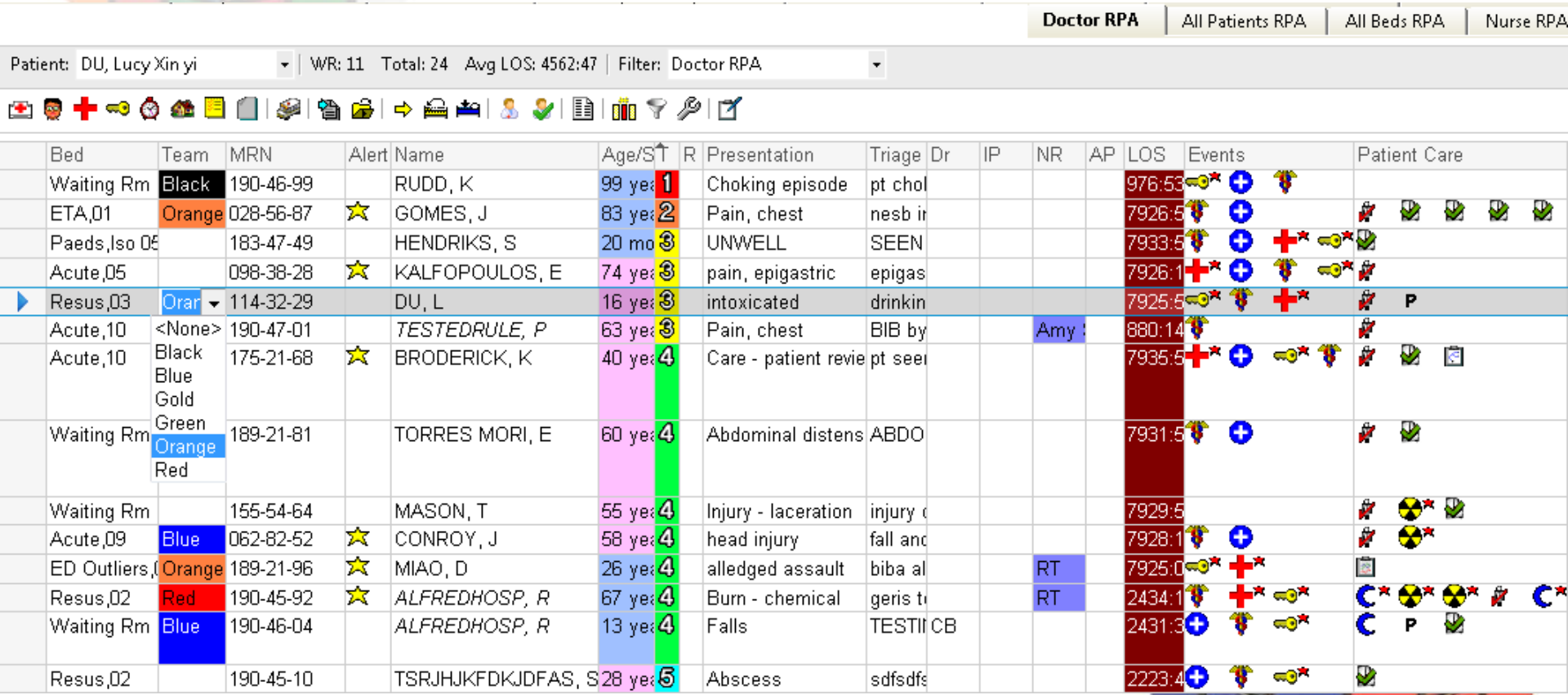
- Patient remains in acute until care complete and discharged

3) Probable discharge but needs further assessment, management or observation over 4-24 hours.

- Patient admitted early to EMU where care is continued by same medical team.
- Inevitably EMU will have a higher admission rate to inpatient unit, but this should not be considered a “failed EMU admission.

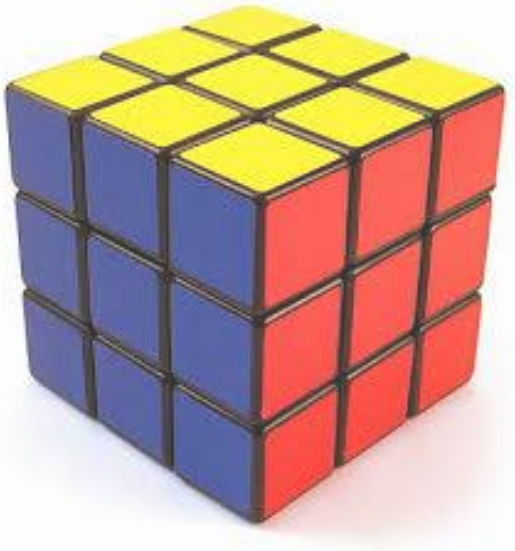




FirstNet: Team Allocation



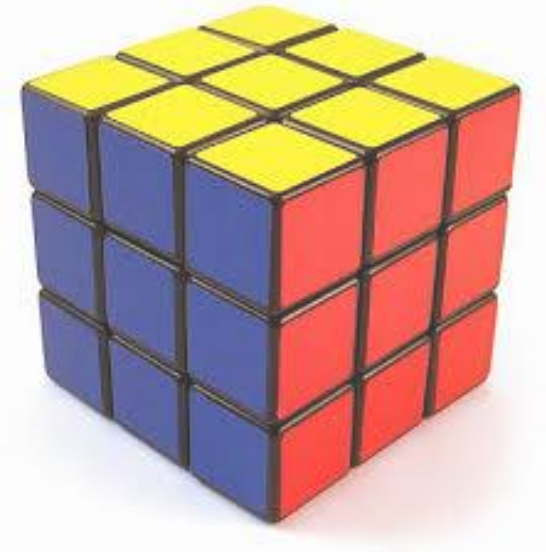
FirstNet: EMU

- EMU has inpatient ward status, so FirstNet tracking lists are not accessible or changeable
- Read only tracking list being developed/tested, but unlikely to be useful
- Physical whiteboard in EMU
- EMU tracking list in FirstNet



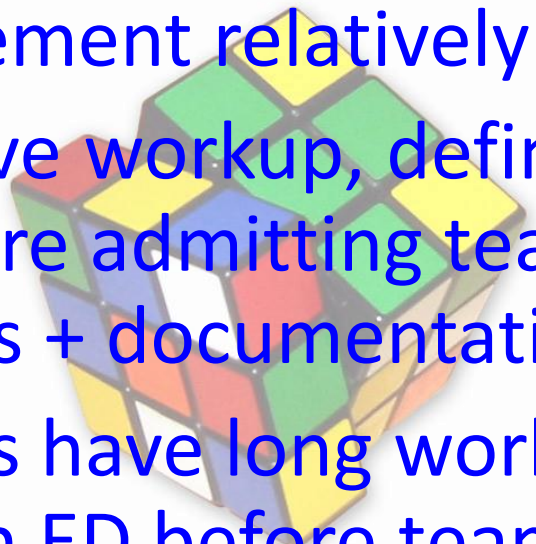
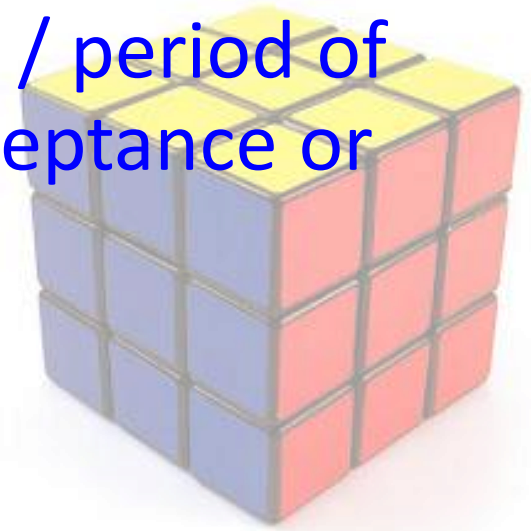
ED Navigator

- 0730-2200 x 7 Days
- Responsible for enhancing the flow of patients through and out of the department.
- Communicate all aircraft (patients) to the Tower (Navigator) to prevent mid air collision



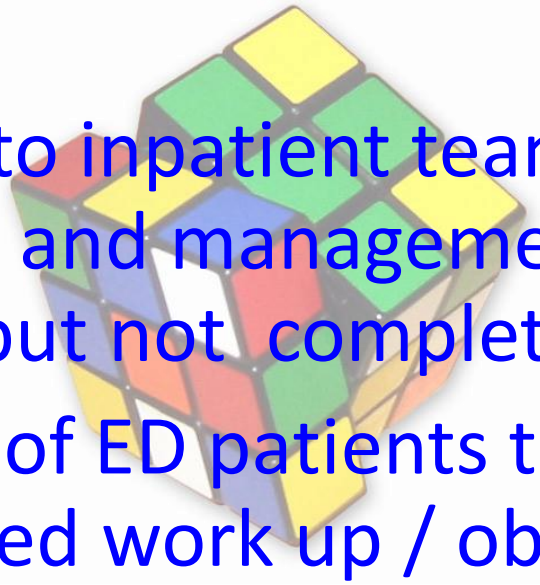
The Old ED

- JMO sees patient first and commences work up.
- Senior involvement relatively late.
- Comprehensive workup, definitive diagnosis and plan before admitting team involved (investigations + documentation)
- Many patients have long work ups / period of observation in ED before team acceptance or going home.

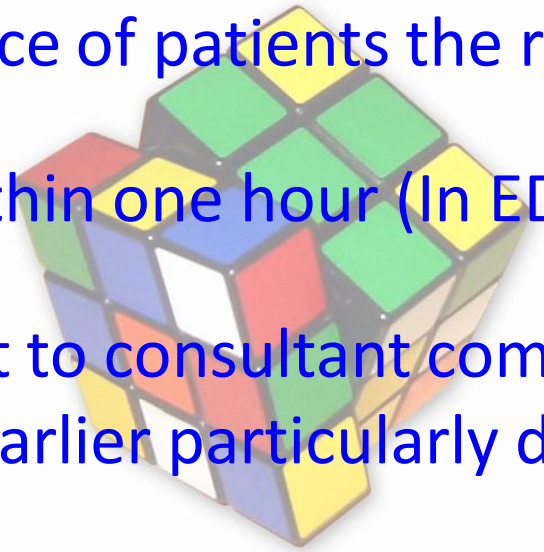
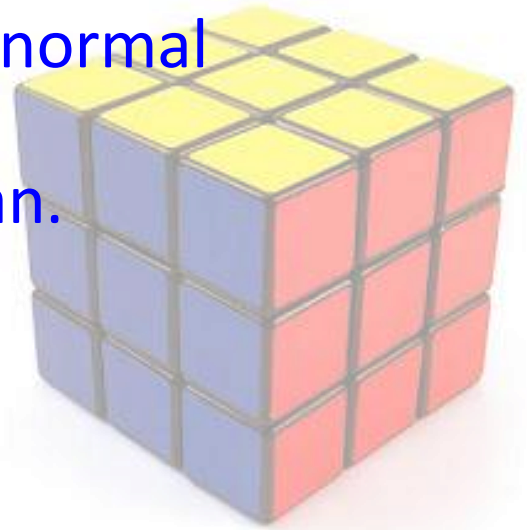
The New ED

- Senior assessment early.
- Junior medical staff better supervised and tasked.
- Early referral to inpatient teams for admission. Investigations and management plan commenced but not complete.
- Identification of ED patients that will need more prolonged work up / observation but are likely to go home→EMU


New ED/Hospital Relationship

- Encourage and enforce aspects of existing ED admission policy for the relatively small proportion of patients that cause problems.
- Phone acceptance of patients the rule in hours and out of hours
- Team review within one hour (In ED if necessary or on ward)
- More consultant to consultant communication.
- Team involved earlier particularly during normal working days
- Full traditional “packaging” vs. 6 hour plan.

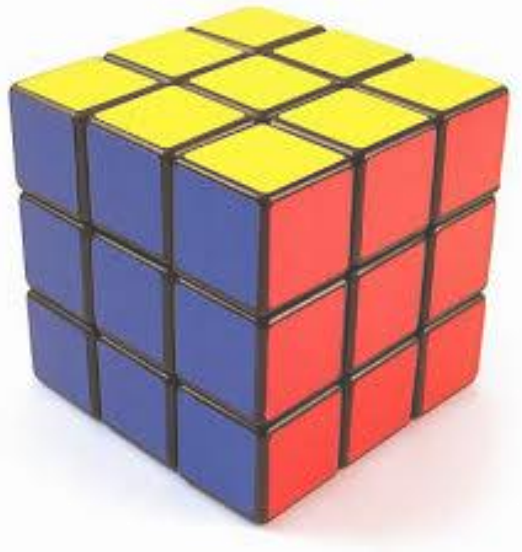




Remember……

- Same number of patients despite new streaming and model of care.
- Like the rest of the hospital we need to be prepared to redesign, innovate and do things differently
- We have had some staff enhancement (ED consultant and night Paeds RMO) and hope for more.
- This will be a challenging process but all of the hospitals who have moved to team based care say they would never go back.

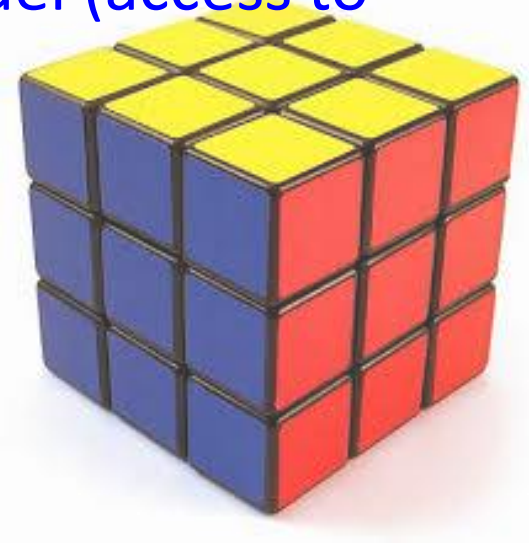
Hospital Challenges

- Timely response to ED
- Resources to become involved in care of patients earlier.
- Precision of ED admission decision. Arrangements to consult other teams and transfer care.
- Ability to discharge patients on ward.
- Handover
- Inpatient short stay capacity
- Discharge practices / Hospital LOS
- CERS



ED Challenges

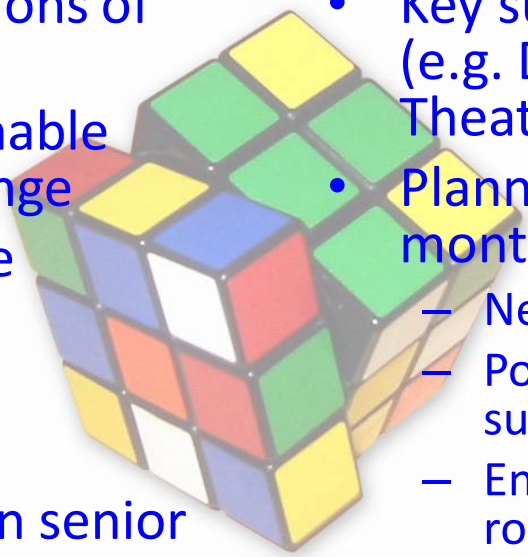
- Overwhelmed teams
  - Patients not being seen within 30 minutes
- ? Sufficient senior staff to run teams.
- Patient surges / busy days
- Cultural resistance to change
- Unfilled shifts and sick leave
- Impact of access block on streaming model (access to acute)
- EMU block
- Nights
- Interaction with inpatient teams



Pathway to implementation

Challenges

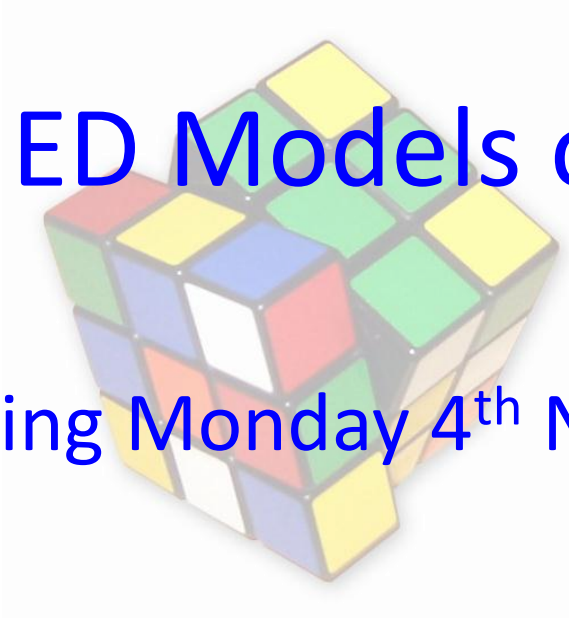
- Unrealistic expectations of management
- “quick fix” vs sustainable patient focused change
- Unrealistic timetable
- Slow pace of:-
  - Recruitment
  - Acquiring monitors
- Consistency between senior medical staff
  - 16 SS
  - 21 VMO



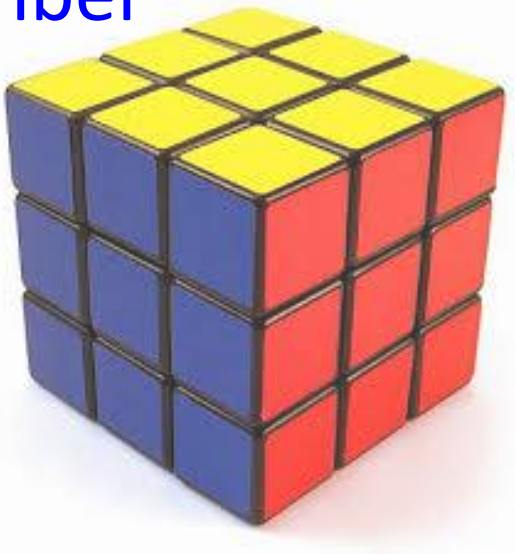
Enablers

- Key supporters within hospital (e.g. Director of Operating Theatres)
- Planned go live date approx. 4 months prior
  - New JMO term
  - Post winter and early spring surge
  - Ensure 16x2x7 senior staff roster in place (even if holes in JMO roster)
- Support for ED Director and NUM (thanks Aaron. Kate and Louise)

New ED Models of Care

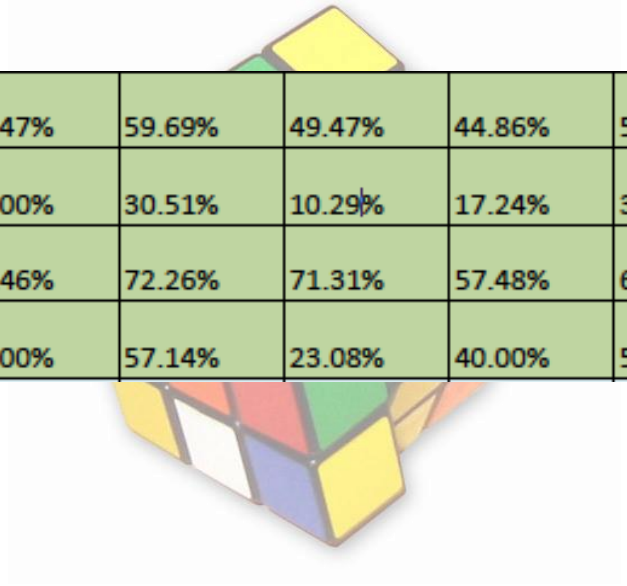


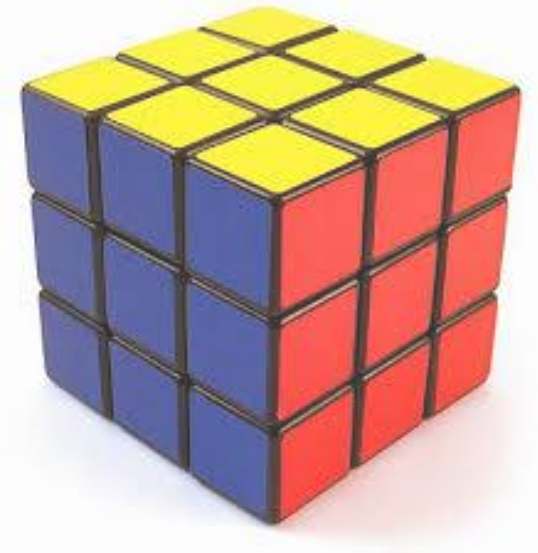
Launching Monday 4th November

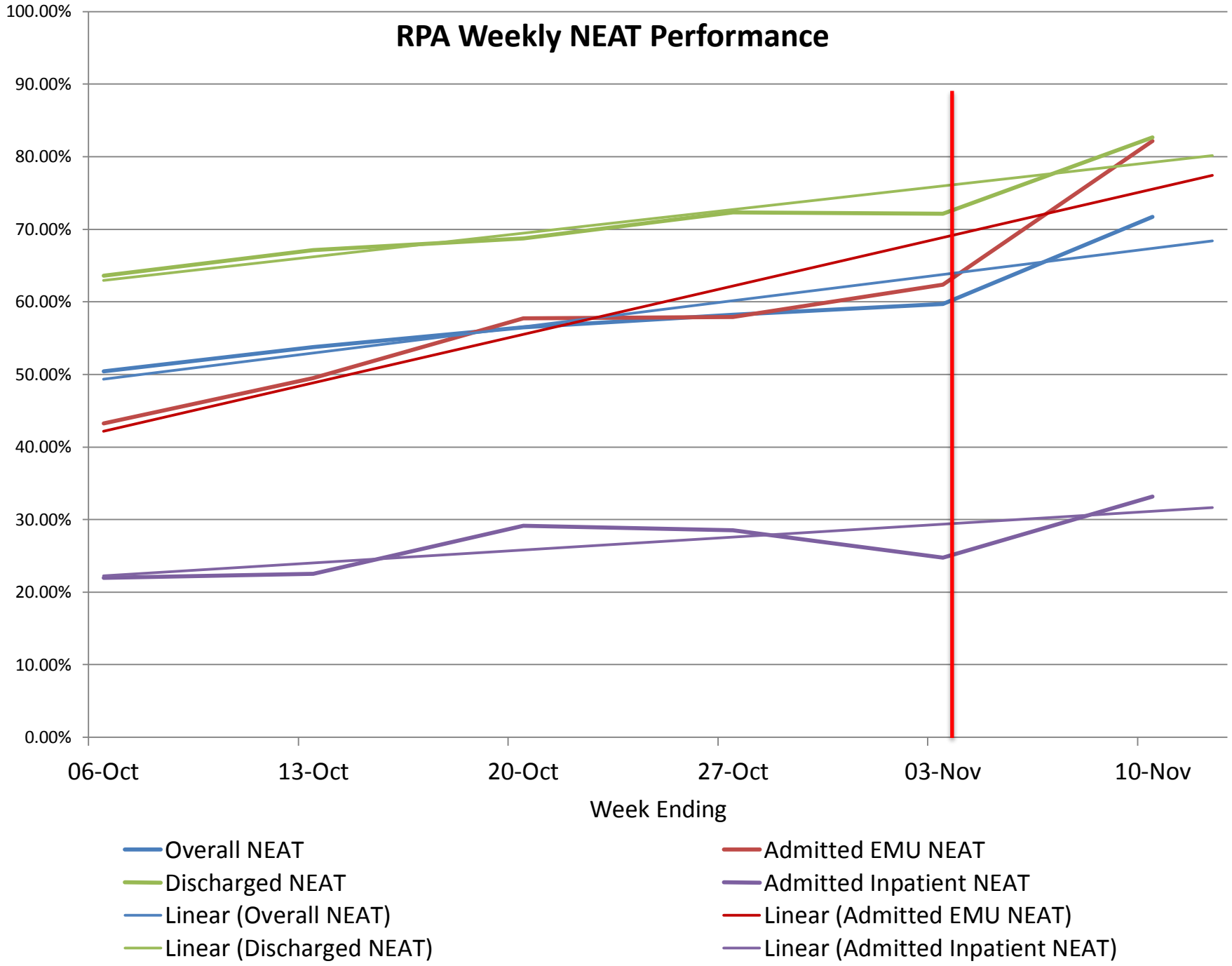


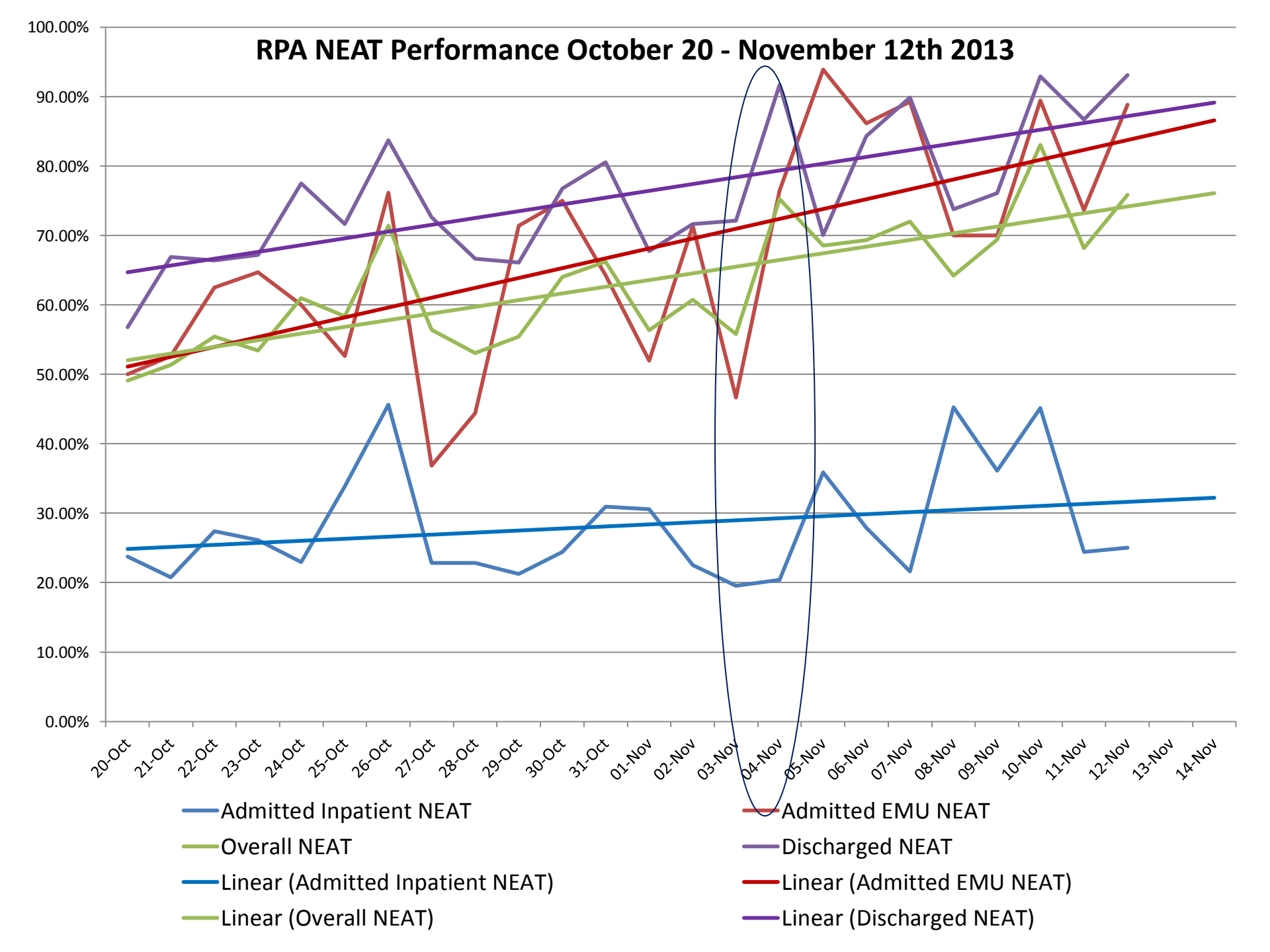
NEAT Oct 7-14

NEAT - Overall (76%)	57.94%	57.47%	59.69%	49.47%	44.86%	57.59%	49.23%		53.75%
NEAT - Admitted	20.00%	25.00%	30.51%	10.29%	17.24%	35.59%	18.87%		22.50%
NEAT - Discharged	72.62%	68.46%	72.26%	71.31%	57.48%	67.42%	60.56%		67.16%
NEAT - EMU admissions	50.00%	80.00%	57.14%	23.08%	40.00%	50.00%	46.15%		49.48%

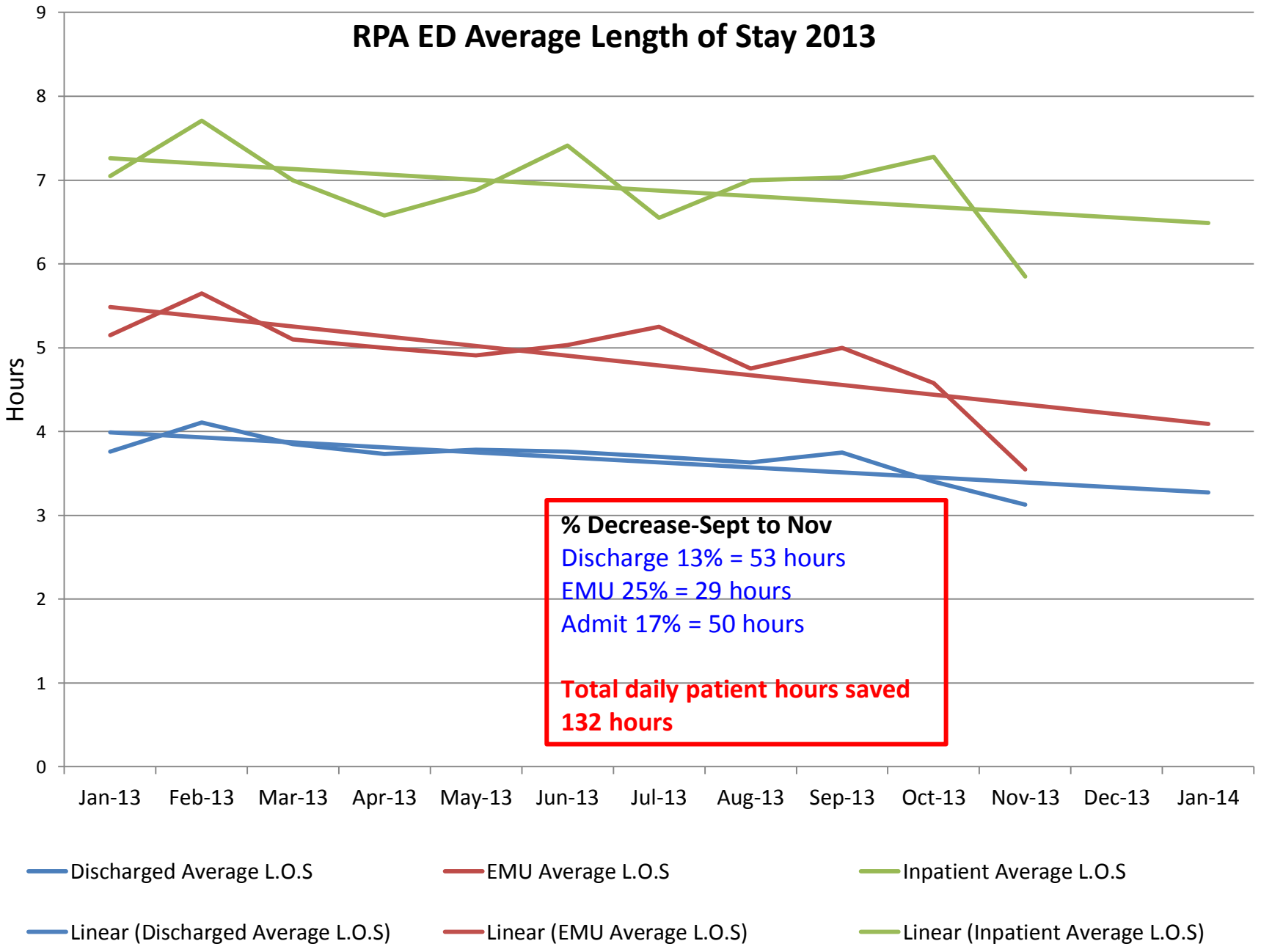





RPA Weekly NEAT Performance
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
06-Oct
13-Oct
20-Oct
27-Oct
03-Nov
10-Nov
Week Ending
Overall NEAT
Discharged NEAT
Linear (Overall NEAT)
Linear (Discharged NEAT)
Admitted EMU NEAT
Admitted Inpatient NEAT
Linear (Admitted EMU NEAT)
Linear (Admitted Inpatient NEAT)


RPA NEAT Performance October 20 - November 12th 2013
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
20-Oct
21-Oct
22-Oct
23-Oct
24-Oct
25-Oct
26-Oct
27-Oct
28-Oct
29-Oct
30-Oct
31-Oct
01-Nov
02-Nov
03-Nov
04-Nov
05-Nov
06-Nov
07-Nov
08-Nov
09-Nov
10-Nov
11-Nov
12-Nov
13-Nov
14-Nov
Admitted Inpatient NEAT
Admitted EMU NEAT
Overall NEAT
Discharged NEAT
Linear (Admitted Inpatient NEAT)
Linear (Admitted EMU NEAT)
Linear (Overall NEAT)
Linear (Discharged NEAT)

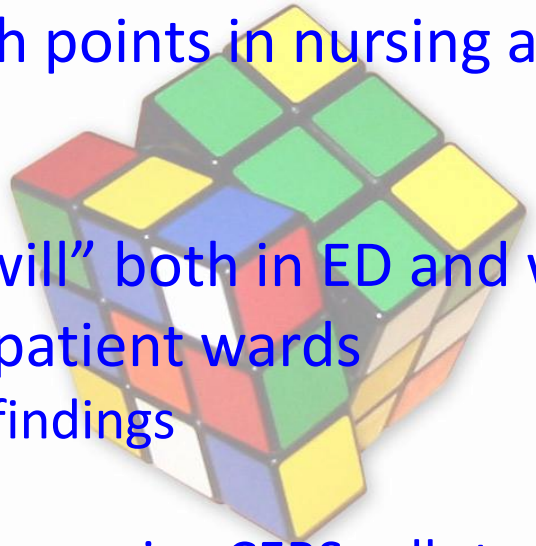
RPA Emergency Department Daily Dashboard			
Date	12/11/2013		
Key	Red	Orange	Green
Target	<=59%	Between 60% - 70%	>=71%
RPA NEAT Performance			
Overall NEAT	75.90%		
Discharge NEAT	93.10%		
Overall Admitted NEAT	56.36%		
Inpatient Admitted NEAT	25.00%		
EMU NEAT	88.88%		
Other Indicators			
Presentations	166		
EMU Admissions	27		
Transfer of Care	85%		


RPA ED Average Length of Stay 2013
Hours
9
8
7
6
5
4
3
2
1
0
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
% Decrease-Sept to Nov
Discharge 13% = 53 hours
EMU 25% = 29 hours
Admit 17% = 50 hours
Total daily patient hours saved
132 hours
Discharged Average L.O.S
EMU Average L.O.S
Inpatient Average L.O.S
Linear (Discharged Average L.O.S)
Linear (EMU Average L.O.S)
Linear (Inpatient Average L.O.S)

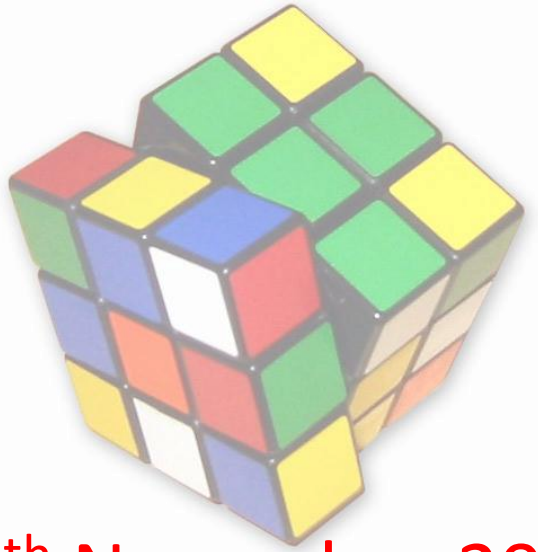
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13
Average daily discharges	126	119	122	120	119	115	115	122	123	117	107
Discharged Average L.O.S	3.76	4.11	3.85	3.73	3.78	3.76	3.7	3.63	3.75	3.4	3.13
Average daily EMU Admissions	10	12	14	14	14	14	15	14	14	16	24
EMU Average L.O.S	5.15	5.65	5.1	5	4.91	5.03	5.25	4.75	5	4.58	3.55
Average daily Inpatient Admissions	41	43	44	45	45	44	44	47	46	44	42
Inpatient Average L.O.S	7.05	7.71	7	6.58	6.88	7.41	6.55	7	7.03	7.28	5.85

Post implementation challenges

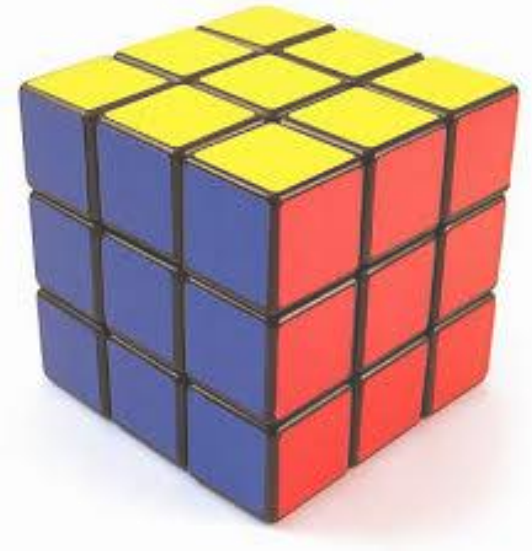
- Worked well with relatively quiet activity (<200 day).
- Orange (RAFT/Paeds) understaffed
- Accentuated pinch points in nursing and JMO/Registrar staffing.
- Managing surges
- Sustaining “goodwill” both in ED and wards
- Pushback from inpatient wards
  - Missed injuries/findings
  - “wrong team”
  - Concern about increasing CERS calls to ward after ED admission.
- Next years target
- Ability to lobby for necessary enhancements.



Team Based Care
Are you ready to play?

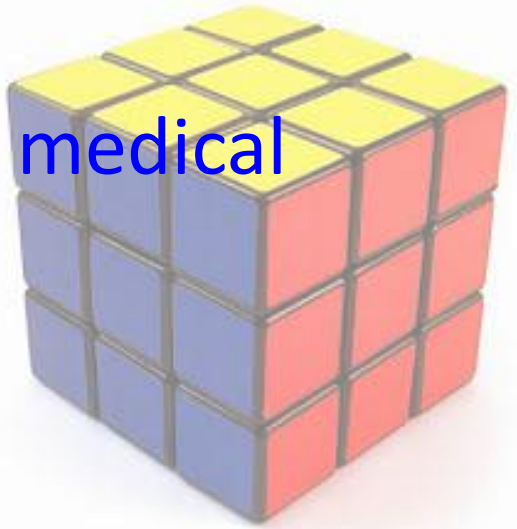


4th November 2013



Thanks

- Aaron Jones/Cate Cunningham
  - Current & past Whole of hospital project officer
- Terence Johnson: ED Nurse Manager
- ED NUMs
- Kate Brockman, Louise Kershaw: NSW Health Whole of Hospital Project
- All the enthusiastic ED nursing and medical staff.



Questions?