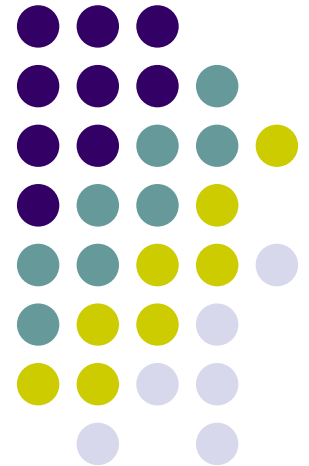


Developments since the Medical Inpatients Study

Don Campbell
General Medicine
Southern Health
2009

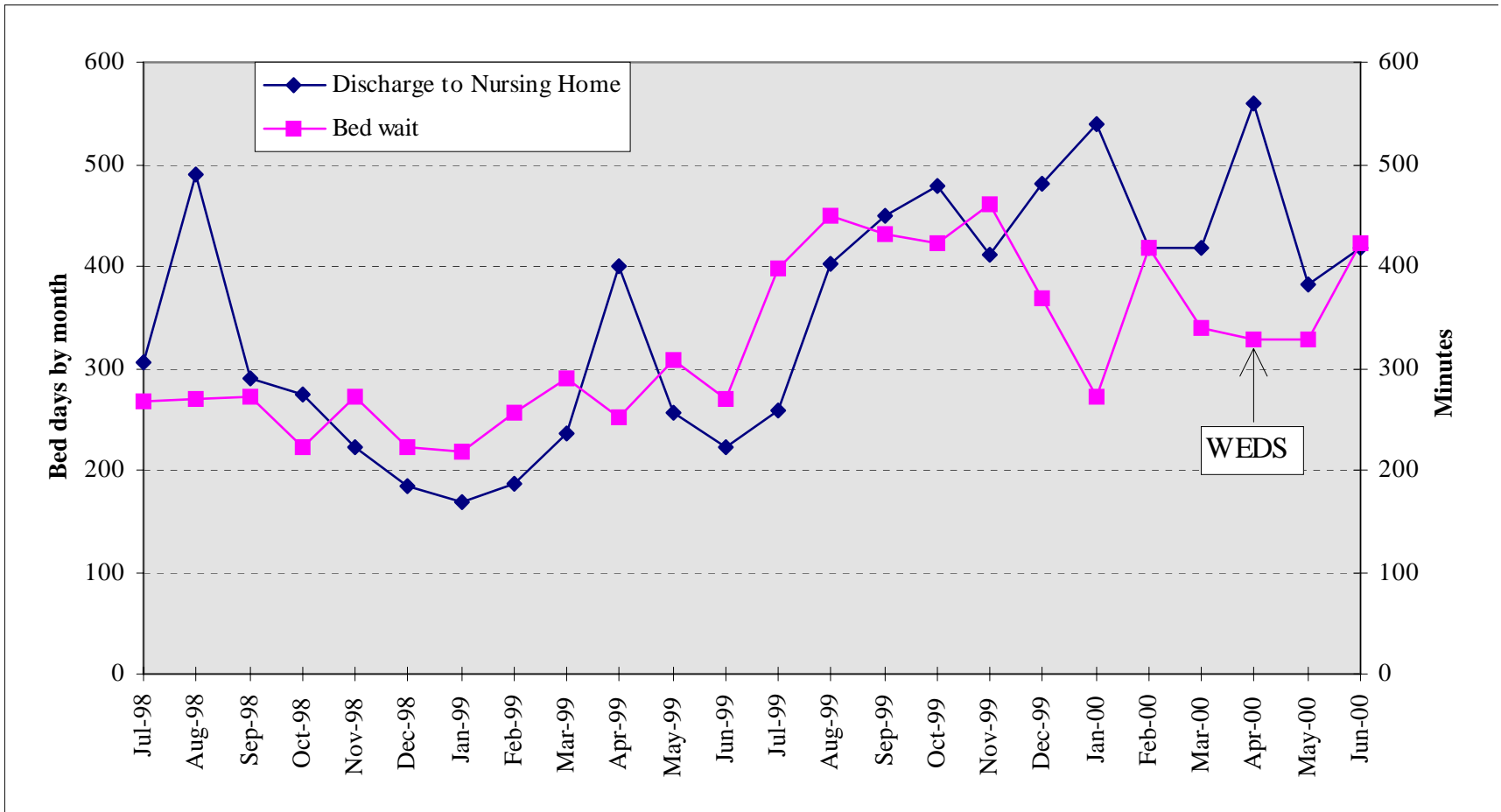
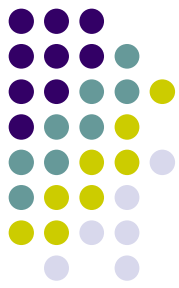




The (local) problem

- **Longer LOS in General Medicine than Speciality Units**
- **Observation at RMH late 1999:**
 - **180 Nursing Home beds closed**
 - **Unintended consequences:**
 - **Deterioration in waiting times to access subacute care**
 - **Rising number of OBD's in General Medicine**
 - **Blow out in admission times from ED**

Bed waiting time in Emergency compared to bed days by month for people discharged to a Nursing Home 1998-1999 and 1999-2000

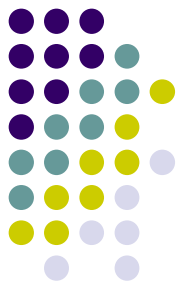


International literature findings



- Link patient destination to hospital bed utilisation.
- Shortages of nursing home beds likely to increase LOS, creating additional “bed-blockers” in hospital beds.
 - (Millard PH, et al. Measuring and modelling surgical bed usage. Ann R Coll Surg Eng 2000;82:75-82)

International literature findings



- Flow process models describe two pools of patients:
 - Complex: 9.3%:-: use 71% of beddays
(av. LOS 22.8 days)
 - Non-complex 90.7%: use 28.6% of beddays
(av. LOS 4.8)

87% of discharged patients go home

- (av. LOS 4.6 +/- 6.6 days)
- 6% discharged to other hospitals
 - (av. LOS 11.6+/- 12 days)
- 1% discharged to other health care accommodation
 - (av. LOS 20.9+/- 25.5 days)

International literature findings

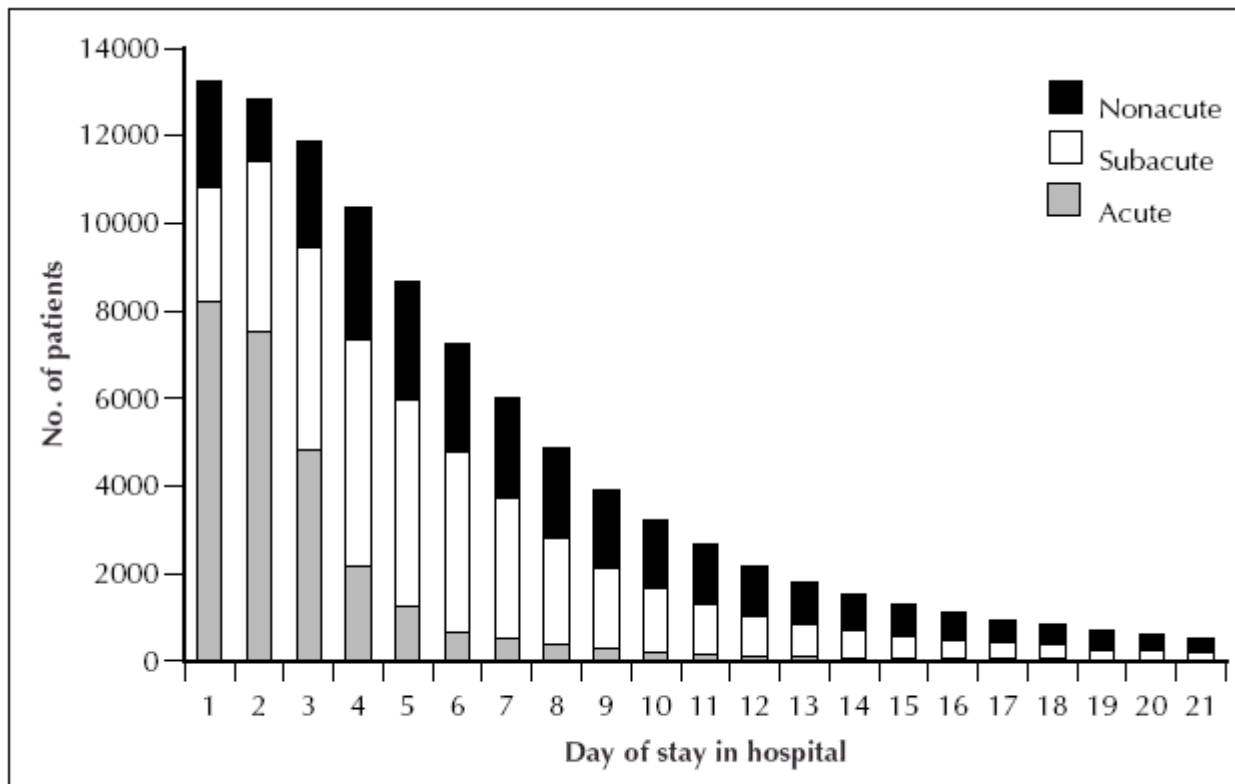
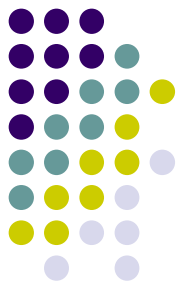


Fig. 1: Level of care needed for each day spent in an Ontario acute care hospital by 13 242 patients with 1 of 8 high-volume, high-variability diagnoses or procedures.

Flintoft VF, et al.
The need for acute, subacute and non-acute care
at 105 general hospital sites in Ontario.
CMAJ 1998;158:1289-96.



- “If you General Physicians can’t get your act together we will close you down and give your patients to the specialists”
 - senior medical administrator 2000

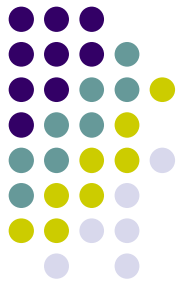




- What was really happening?
 - Medical Inpatients Study
- What did we learn?
 - Present model at MMC
- What could the future look like?



Medical Inpatient Study



Setting: 5 Level 1 teaching hospitals

Study 1 - Description of medical inpatient management and activity

- A Characteristics of patients admitted to hospital under medical units and of each hospital for previous 12 month period
 - Comparative analysis of Top 10 DRGs between specialist and generalist units.
- B Management structure for care of medical in-patients
- C Patient and carer experience of medical in-patient care

Medical Inpatient Study



Study 2 - Census of medical in-patients

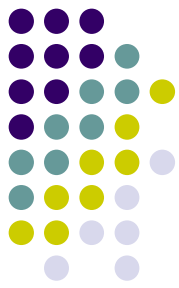
One day snapshot (cross-sectional study)

Activity involved in medical in-patient management on a day to day level.

Study 3 - Cohort Study

Process of care for a representative series of patients across the episode of care.

<http://www.health.vic.gov.au/archive/archive2006/hdms/finmips.pdf>



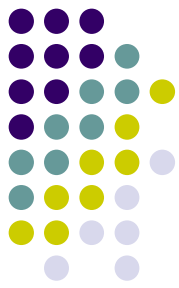
Study 1: Medical Inpatient Management & Activity

Management structures supporting care of medical in-patients

- Observations across 5 hospitals:
 - GMU HMO's are more junior and have higher turnover levels
 - SMS in GMU sessional
 - Nursing and allied health have higher levels of junior staff
 - Service/Quality improvement activities variable, uncoordinated and not aligned to organisational goals
 - Professional development an individual responsibility, unrelated to organisation strategic goals;
 - No formal management skills training provided for clinical leaders

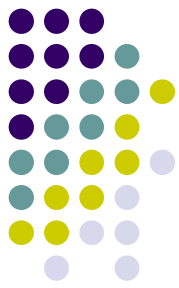


Study 1: Medical Inpatient Management & Activity



- **Patterns of clinical care of medical in-patients**
 - High occupancy levels
 - GMU patients emergency admissions
 - Triage at admission: older patients with cognitive and social problems, with multi-system disease or multiple co-morbidities are admitted to GMU
 - Linkages between GMU and rehab/geriatric service
 - Uncoordinated at clinical management level
 - Reflect clinical culture rather than alignment of organisational goals with clinical goals

Study 1: Medical Inpatient Management & Activity



VAED analysis 1999-2000

Top DRG's managed in GMU's-

1. **Ratio of LOS in SMU and GMU** across all hospitals:

NO difference in LOS between GMU and SMU for Respiratory infections, COAD, CCF, Dementia or Stroke.

The only difference observed for Unstable Angina (favoured SMU)

2. **Ratio of LOS by Hospital** after adjustment for DRG, age and gender, discharge destination, comorbidities:

- NO difference at Alfred and MMC
- shorter LOS in GMU at ARMC
- shorter LOS in SMU at RMH and SVH

Study 1: Medical Inpatient Management & Activity



VAED analysis 1999-2000

	MMC		All Hospitals		
	GMU	SMU	GMU	SMU	All
Seps	1082	5838	12305	32292	45597
Beddays	9605	41009	104167	222584	326751
ALOS	8.9	7.0	8.5	6.7	7.2
LOS ≥ 14 days					
% separations	19.0	11.4	16.4	11.2	12.6
% total beddays	48.0	39.4	50.2	47.4	48.3
ALOS	22.4	24.3	25.9	28.2	27.4

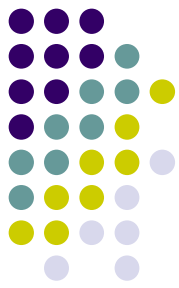
(Excluded patients with LOS > 200 days - 8 in total)

Study 1: Medical Inpatient Management & Activity



LOS by destination

	MMC		All Hospitals		
	GMU	SMU	GMU	SMU	All
Home					
% Seps	71.7	81.0	73.9	86.4	83.1
ALOS	8.0	6.1	8.5	6.7	7.2
Other hospital					
% Seps	14.6	10.7	9.8	6.6	7.4
ALOS	11.4	12.7	12.2	12.4	12.3
Nursing Home					
% Seps	4.0	1.7	3.8	0.8	1.7
ALOS	14.6	14.7	14.6	17.8	15.5



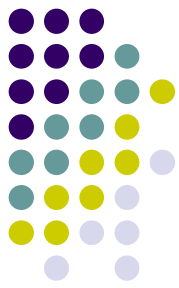
Study 2 - Census of medical in-patients

Inpatient census of 956 non-same day medical inpatients at 5 hospitals (RMH, SVH, Alfred on 30/8/00 and ARMC, MMC 6/9/00).

Distribution of patients included in the Census

	GMU	SMU	ICU	Total	% GM of total*
Alfred	36	153	4	193	19
ARMC	67	131	7	205	34
MMC	54	135	5	194	29
RMH	84	127	8	219	40
SVH	53	92	0	145	37
ALL	294	638	24	956	32

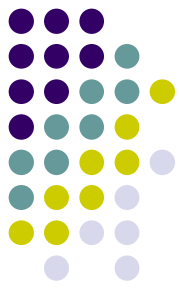
* ICU patients excluded from % calculation



Study 2 - Census of medical in-patients

Duration of Stay of Census Patients (days in hospital)

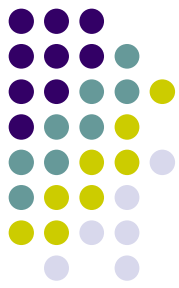
Hospital	GMU		SMU		ALL	
	Mean	Median	Mean	Median	Mean	Median
Alfred	21.7	6	13.8	7	15.3	7
ARMC	15.4	8	14.5	8	14.8	8
MMC	10.4	8	11.4	7	11.1	7
RMH	17.1	7	10.1	5	12.9	5
SVH*	7.5	6.5	8.3	5	8.0	6



Study 2- Census of medical in-patients

Proportion of patients who were medically ready for discharge and for whom discharge was planned that day

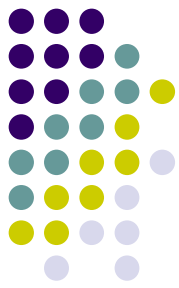
	Alfred	ARMC	MMC	RMH	SVH	All
Ready ?						
GMU	36	37	31	52	17	37
SMU	17	24	24	17	26	21
If ready, will they be discharged today?						
GMU	29	28	24	25	56	29
SMU	46	55	75	59	63	61



Study 2 - Census of medical in-patients

Reasons identified for failure to discharge when medically ready (% of total patients ready for discharge)

	GMU	SMU
Placement issues	60	44
Medical consult	9	11
ACAS consult	14	6
Allied health consult	5	7
Rehab consult	3	7
Home supports needed	4	11
Outcome of tests	4	6



Study 2 - Census of medical in-patients

Factors predicting Expected Time in Hospital ≥ 14 days:

- **Social factors** affecting LOS (OR = 2.89; $p < 0.0005$)
- **Not oriented** in time, place and person (OR = 1.96; $p < 0.0005$)
- Age (yr) (OR = 0.98; $p < 0.0005$)
- Duke Severity of illness score (OR = 1.01; $p = 0.003$)

NB: Specialist Medical Unit did not predict shorter LOS



Study 2- Census of medical in-patients

Conclusions

- GMU's are as efficient as SMU's
- LOS (and DOS) have skewed distribution (av. LOS figures mislead)
- Admitted episodes accounted for by two groups : long and short stay patients

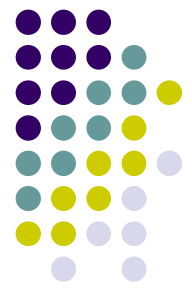
Hypothesis:

Delayed discharge affects demand management

Discharge capability is affected by:

- (i) availability of supported community care and in-home and carer supports
- (ii) efficient discharge management practices

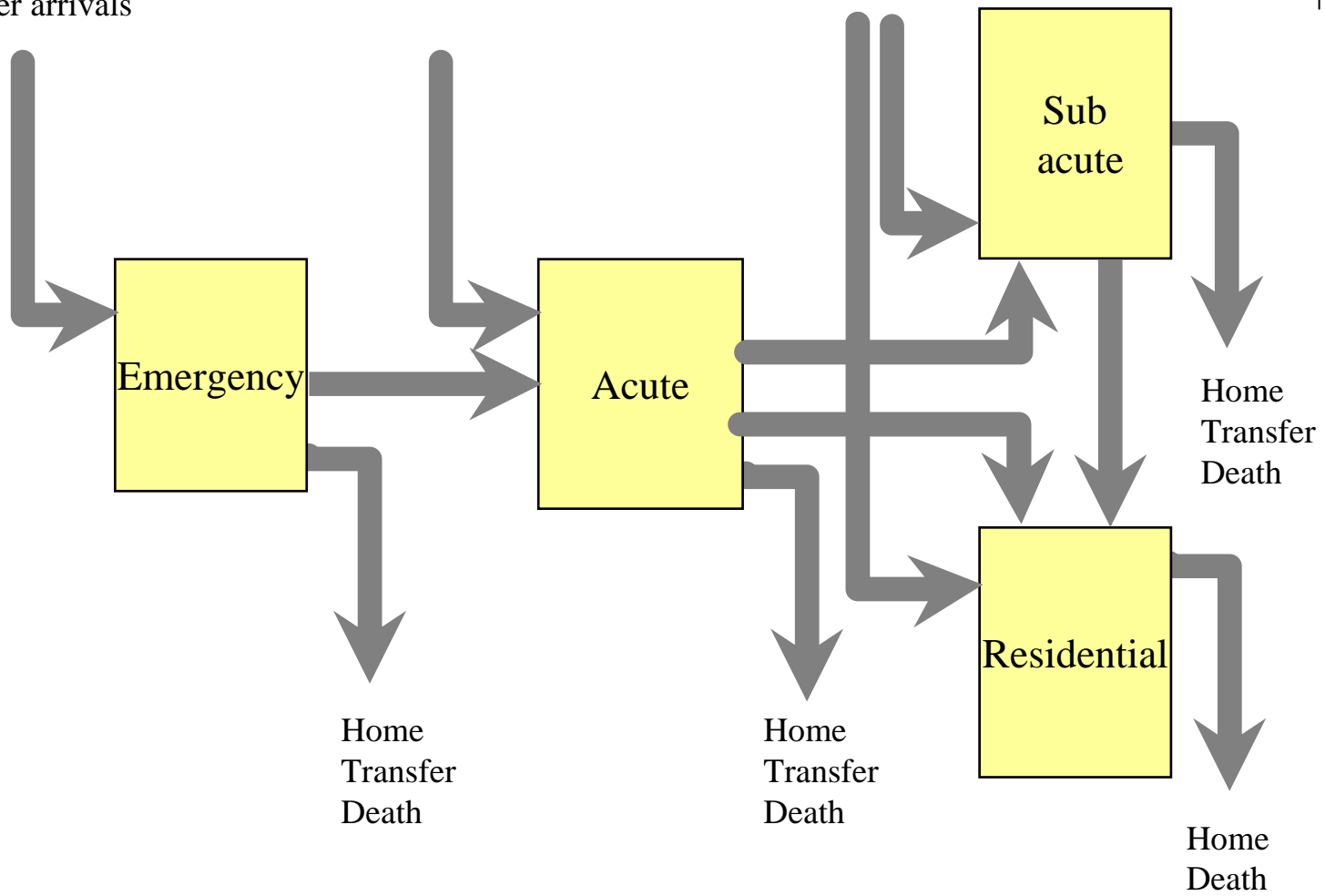
Between hospital variation in performance warrants closer investigation



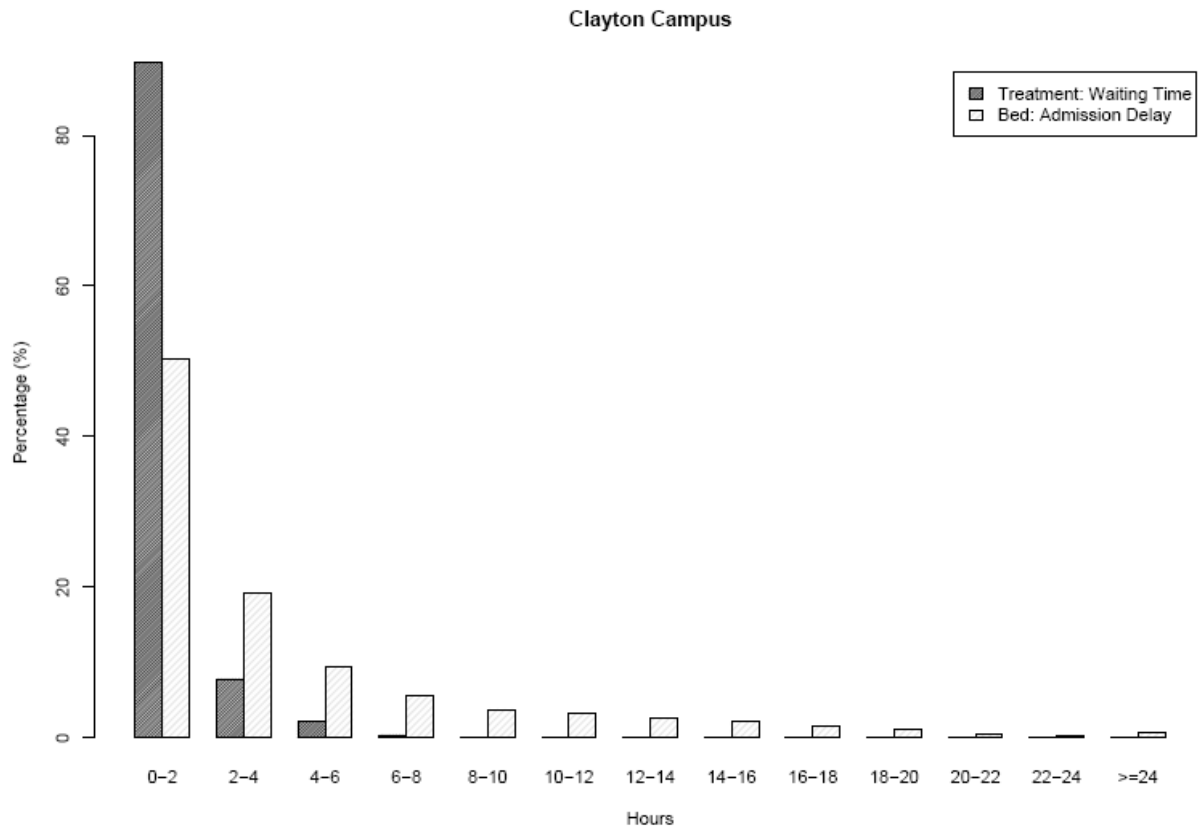
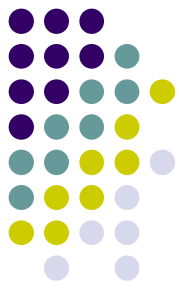
Ambulance arrivals
Other arrivals

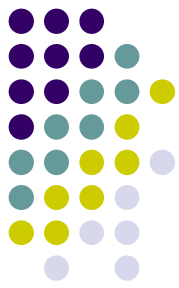
Elective procedures

Community demand

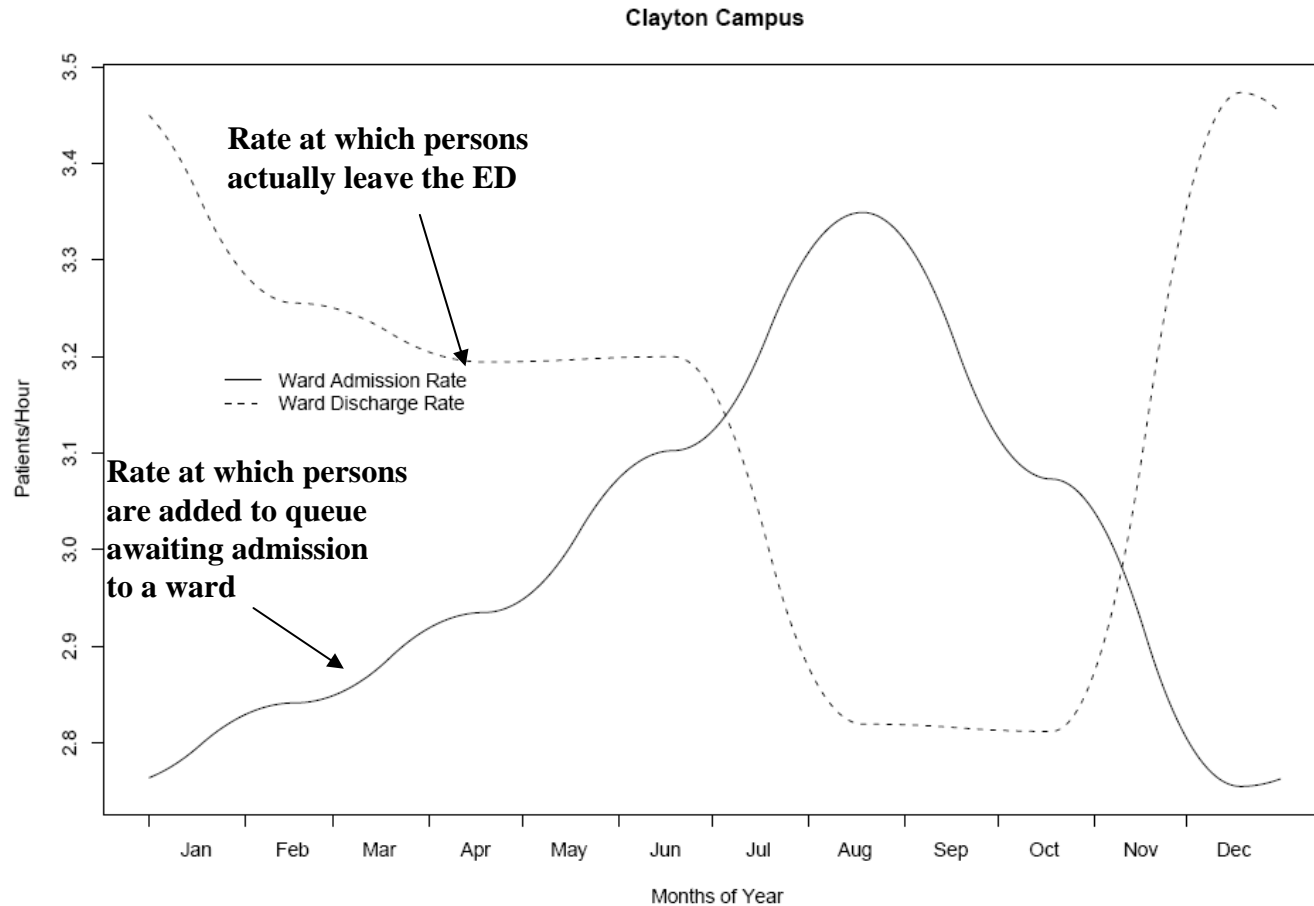


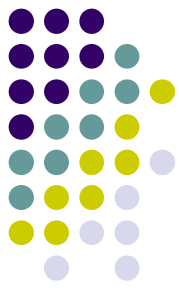
What it looks like in the ED





Impact of congestion on ED performance





**Your granny has just been admitted
under General Medicine at MMC**

Are you happy?



MMC

- Patients
 - Older
 - More complex
- ED
 - Congestion a serious issue
- Greater specialisation

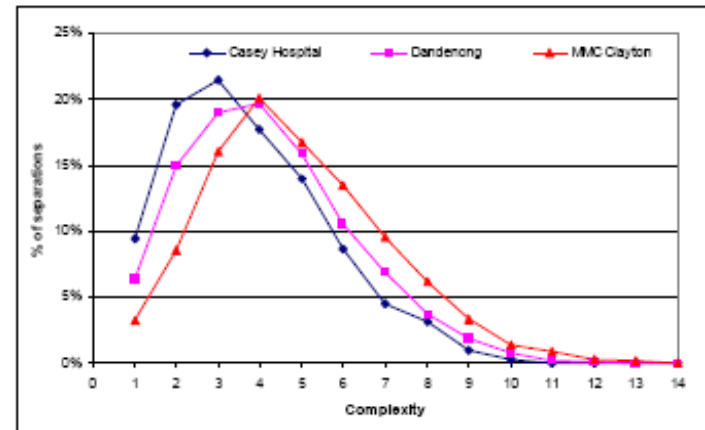


Figure 1: Complexity of general and geriatric medicine patients by site (2006/07)

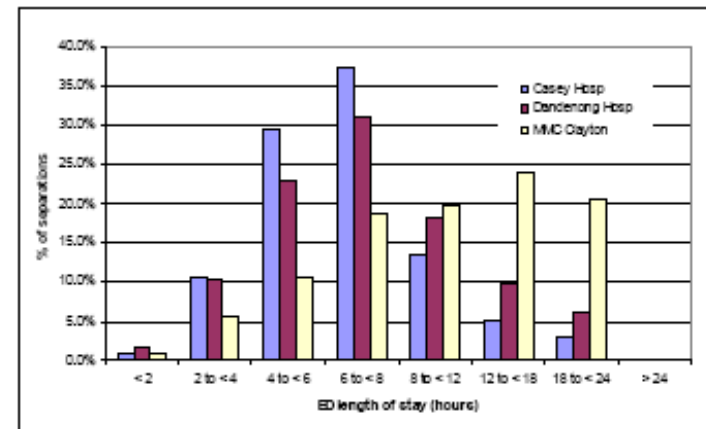
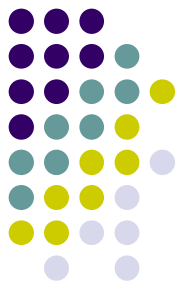
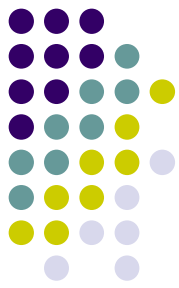


Figure 2: ED length of stay for general medicine ED presentations by site (2006/07)

History



- General Physician
 - VMO Model
 - Supervision: Two or three SMS rounds per week
- Receiving Units
 - Medical Registrar and Intern
 - Inexperienced
 - High rotation
 - Take days & post-take rounds
 - “Learning by doing”
- Nurses
 - Increasingly disengaged in medical team (too busy)
- Patients
 - Deserving poor
 - Twin impacts
 - Specialisation
 - Aging population
- Relationships
 - ED: fraught
 - Aged Care: anonymous
 - GP: non-existent



Situation analysis at MMC

Specialisation within General Medicine

AMUA

- Geriatricians: three rounds per week
- selective elderly destined for GEM/Rehab

AMCU

- Intensivists: intensive supervision
- selected short stay patients

Gen Med A& B

- Selected Specialists: three rounds per week
- “John West” model

Home wards and outliers

- Capped unit numbers/ NO take days

Bed and clinical management de-coupled

Admission process

- Complex:
 - Three way negotiation: ED, Specialty units, General Medicine units (multiple)

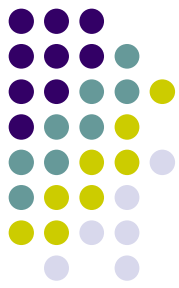
Discharge process

- Arcane and archaic
- Daily MDT meetings

Relationship between Acute and Subacute

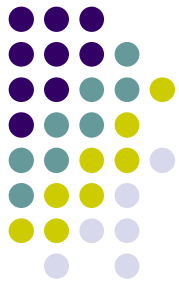
- Fail to recognise important customer relationship
- Arms length relationship with Geriatric service

New model at MMC



- Philosophy
 - Patient-centred
 - Relationships with ED and Geriatric services
- Workflow model
 - Customer service: ED as a customer
 - Right place at the right time: Pull not push
- Work practice
 - Redesign roles: de-stress junior registrar role
 - Invigorate senior medical staff career structure

Consistent Service Model at MMC



- “Right patient, right team, right place, right length of time”
- Connected system
 - “Pull Model”
 - APA: Empty bed
 - Couple clinical & bed management (ADC nurse)
- Implement Rehab and Aged Liaison Service
 - Nurse initiated assessment
 - Eliminate re-work and duplication

Staffing

- Registrar services ED (stat)
- SMS on the floor:
 - “Every morning, every day”
- Manageable (junior) workload

New roles for senior nurses & Allied Health

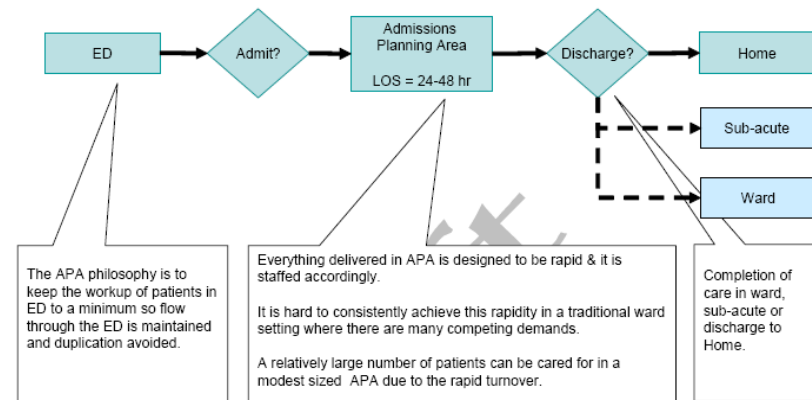


Figure 6: MMC Clayton general medicine patient flow, incorporating Admissions Planning Area

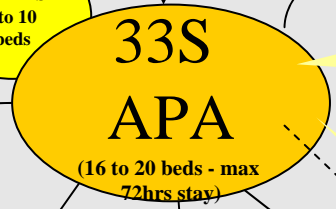
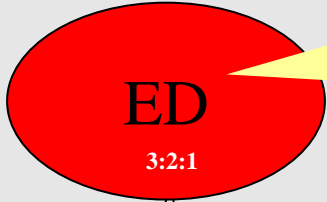


RALS

One rostered Gen Med Reg (Intake Controller) manages ED consults and assigns patients to Gen Med Team each morning
3:2:1 targets apply

Short stay (<24hrs) "observation" patients stay in ED as is the case now

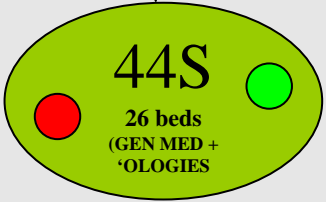
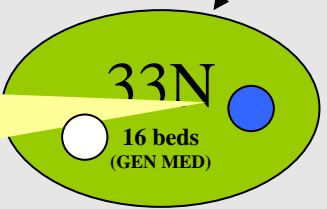
Direct to Sub-acute



Admission Planning Area - focus on rapid assessment, management planning with senior input, and "continuous flow" GRUNT AT THE FRONT

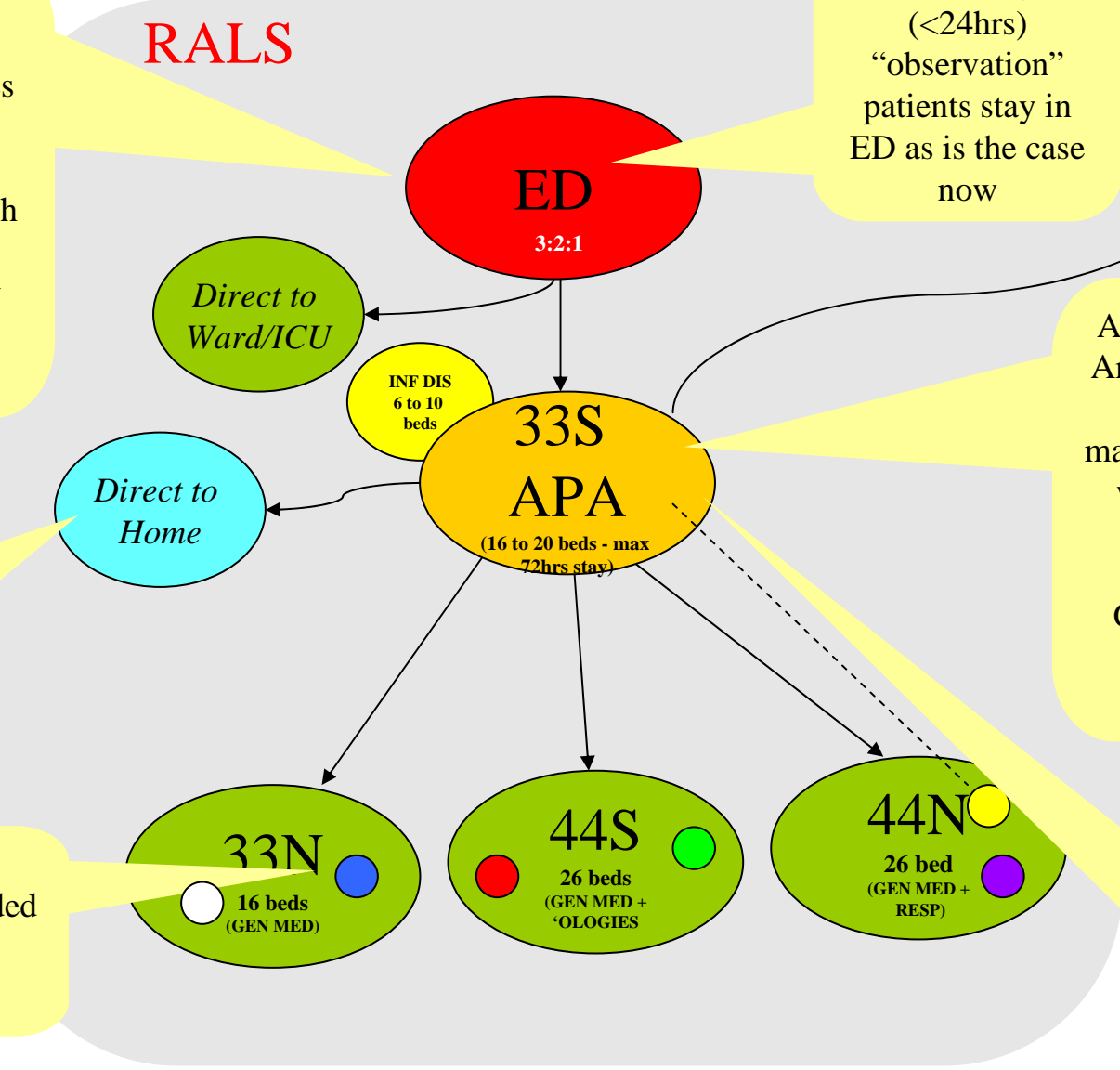


Maximise "direct to home" discharge from APA



Six Medical Teams – expanded next slide

The same Medical Team stays with the patient throughout the stay

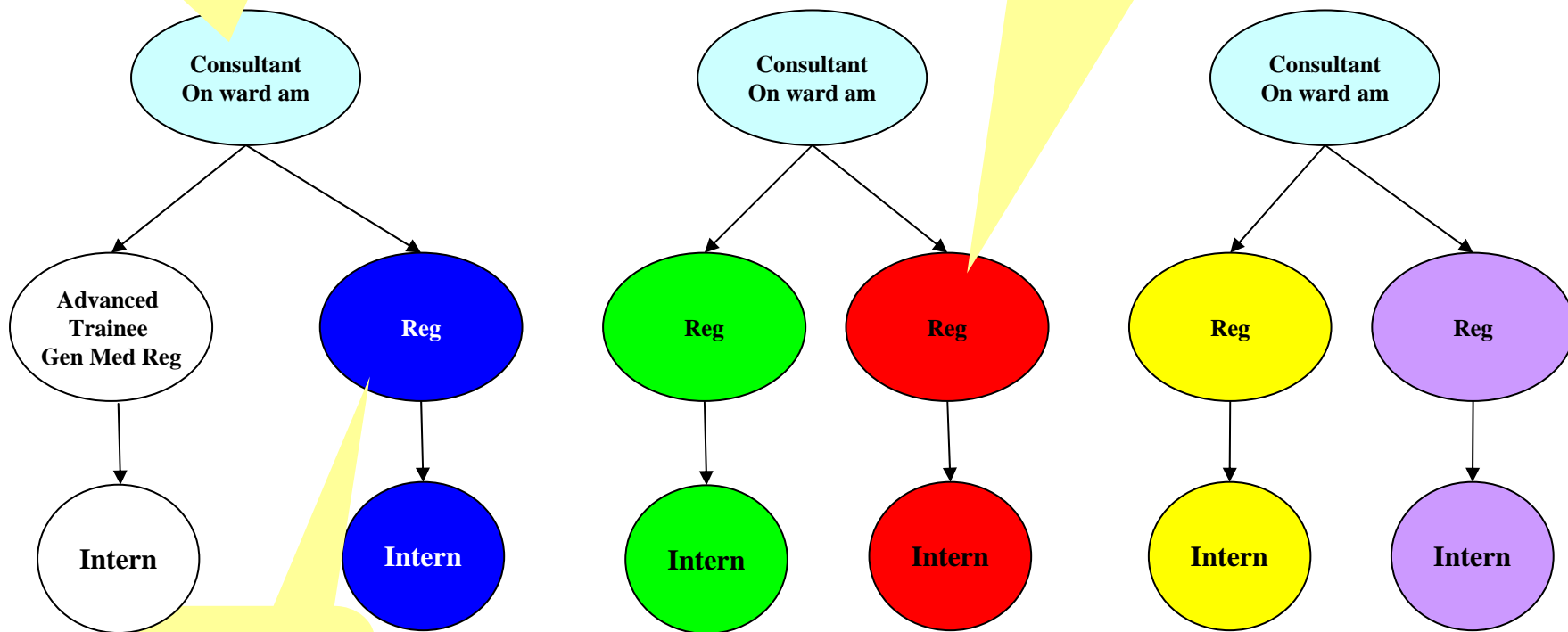


Medical Team Structure



“Every morning every day”
working two medical teams

All medical teams get the
same patient mix



Each team
is colour
coded

Typical patient load per
medical team

12

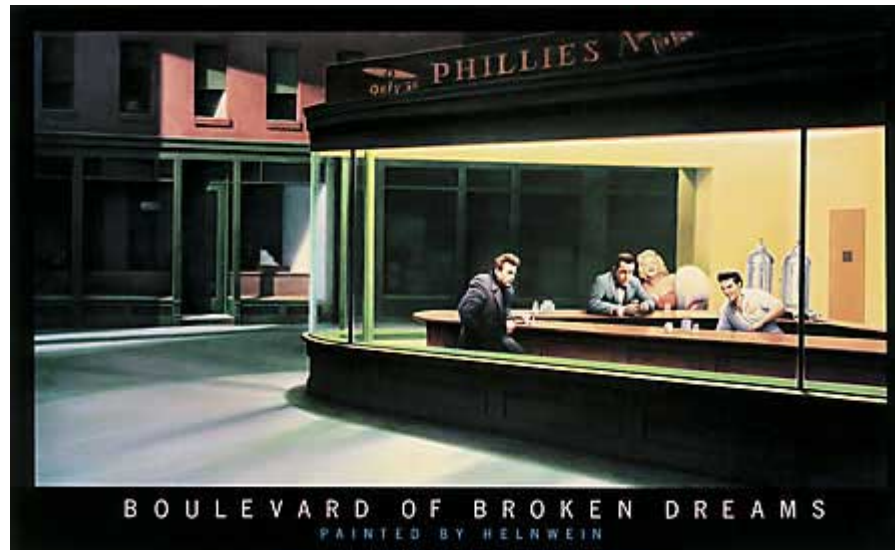
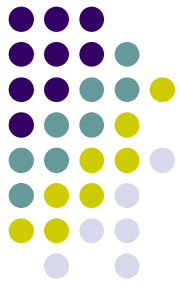
12

12

12

12

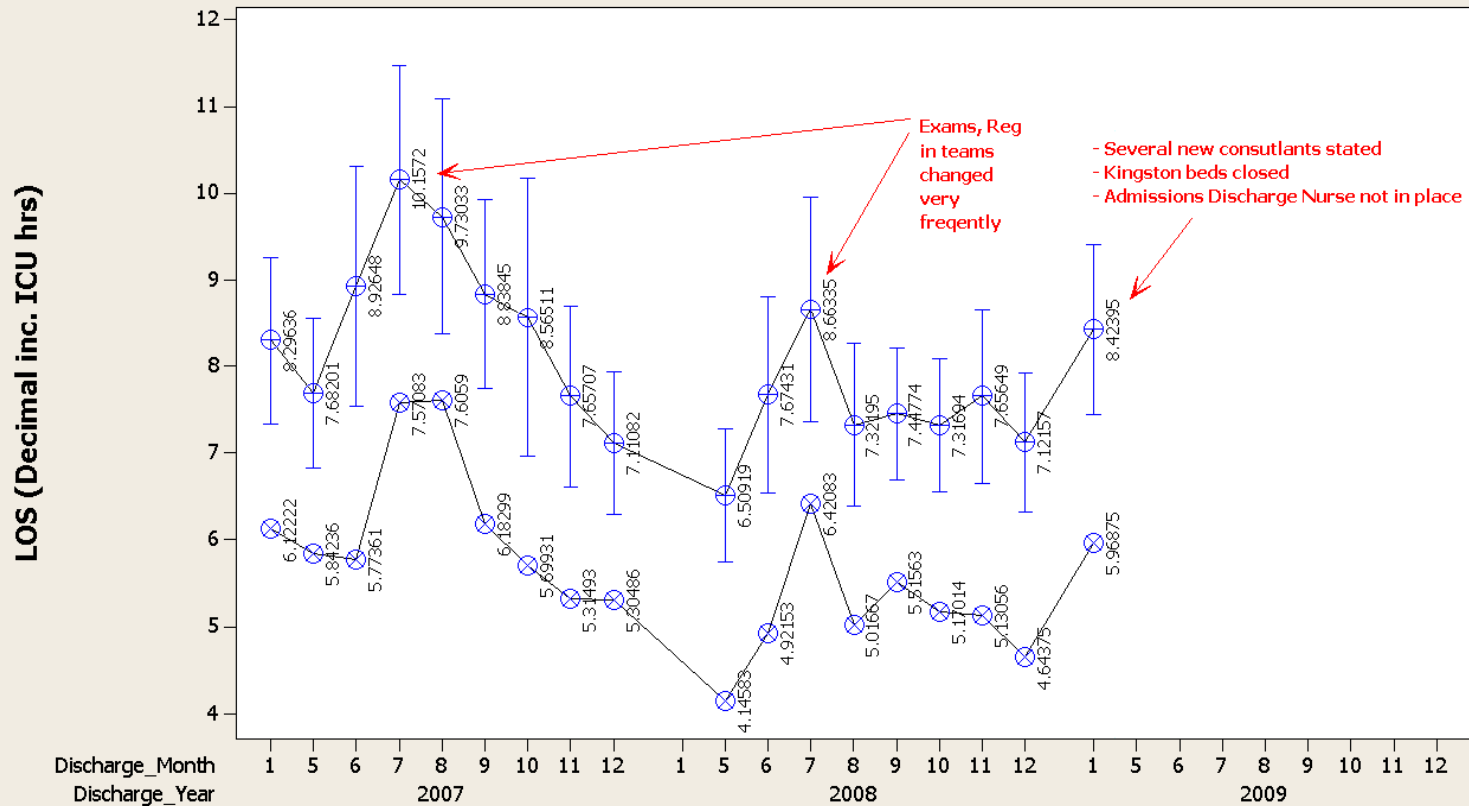
How has the new model performed?



LOS (Decimal inc ICU hrs) vs Discharge Year, Discharge Month

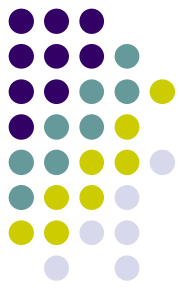
95% CI for the Mean

Matched periods Jan, May to Dec 2007 (Old Model) and May to Dec 2008, Jan 09 (Ne



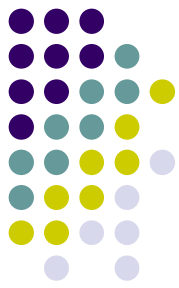
Overall

	2007 Jan, May to Dec	2008, Jan, May to Dec	Variance	Percent Var
Avg	8.53	7.56	-0.97	-11.4%
Median	5.99	5.13	-0.86	-14.3%
Max	141.07	109.25	-31.82	
Bed Days	16275.00	16193.24	-81.75	-0.5%
Separations	1894	2142	248	13.1%



Comparative performance

- Significant improvement in performance maintained:
 - Approx 1 day reduction in LOS:
 - Approx 8 beds returned to system
 - 13% increase in throughput
 - More improvement will come
 - End-to-end business process view
 - Understand internal customer relationships better
 - Redesign workpractice/workforce/workflow
 - Investment focus>> cost cutting



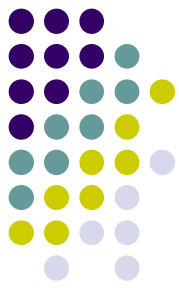
Comparative performance

- Seasonal degradation in performance
 - Likely reason: impact of congestion
 - Why?
 - Poor understanding of customer service requirements
 - Poor work practice and workforce design
 - Poor resource allocation
 - Competition for resources between elective and emergency activity



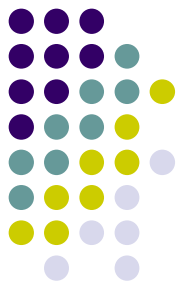
What has worked well

- SMS daily input
- Morning Report
 - Supervision
- MDT Meetings
- Registrar stress & productivity
- Patient flow and constraints
 - Block identification and resolution
- RALS
 - Nurse initiated/Team based geriatrician
 - To be further developed
- Intake Controller
 - Responds to ED
 - Load levelling
 - Referrals from other units
- Weekend handovers



Next steps

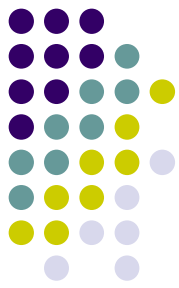
- **Winter bed plan**
 - Acute
 - Subacute: additional low cost resource for patients awaiting Community Residential Care (HLC & LLC)
- **Improve APA processes**
 - Admission & Discharge Coordinator
 - Tight bed management
 - Focus on queue management in ED
 - Discharge process redesign
- **Weekend and public holidays**
 - Junior staff rosters
 - Handover and communication protocols
- **Rapid review clinic**
- **KPI's** used by frontline workforce



Where to from here

- Understand the impact of congestion

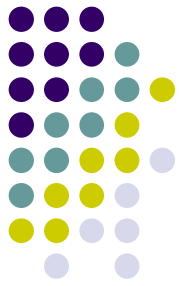




What is needed

- **Re-allocate resources**
 - Medical Admissions Planning Area
 - Priority access to diagnostic services
 - Customer focus at all levels
 - Queue management
 - Acknowledge resource impact of long stay patients
 - Invest in additional resources in subacute care

Future developments in Acute care medicine



- **Workplace**

- Patient location
 - Based on acuity of nursing care needs and medical complexity
- Acute care area
 - Priorities for access to diagnostic services
- Redesign based on task and workers needs

- **Workflow**

- Separate elective and emergency streams
- Critical relationships
 - ED: “pull model”
 - Downstream suppliers: Subacute Care and Community residential care

Future developments in Acute care medicine



- **Workforce**

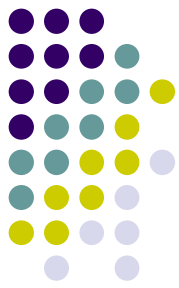
- Senior medical career model
- Workforce substitution

- **Work practice**

- Professional roles and responsibilities
- Role substitution and redesign
 - Make it easier for doctors to do their (new) job
 - New roles for allied health and nurses in multidisciplinary teams

- **Information**

- Clinical Information management and communication
- System Performance monitoring
 - Predict and manage bottlenecks and seasonality



Lessons learned

- Complexity theory
 - Apply to care of elderly
 - Patient centred
 - Manage acuity
 - Prevent functional decline & harm
 - Collaborative
 - Knowledge based
- Simulation modelling
 - Connected systems:
 - ED/ Acute/ Subacute
 - Rates and capacities
 - Stocks and flows
 - The law of unintended consequences
- Systems theory
 - Theory of constraints
 - Lean thinking
- Learning from others
 - Auckland: MAPU
 - Caulfield: Acute in subacute
- New models of care based on the patient
 - Work flow
 - Work practice
 - Workforce

Acknowledgements

- Jill Nosworthy
- Keith Stockman
- Peter Taylor
- Caroline Brand
- Chris Bain
- Graham Byrnes
- Elmer Villeneuve

