Appendix B: International case study – Emory University Orthopaedics and Spine Hospital (EUOSH)[1]

Summary

- Purpose-built centre designed and equipped specifically for joint and spine patients
- Services concentrated on a single site; previously provided at a multi-specialty university hospital and other sites
- Able to treat patients of all levels of acuity – including referrals from other hospitals (excluding EF <25%, pulmonary hypertension, acute renal failure – not previously on dialysis)
- Fully dedicated resources and teams, leading to low rates of infections and revisions
- Emory has developed many innovations and improvements to the pathway to increase quality, value and patient centredness:
  - total joint classes preadmission
  - extensive screening presurgery to identify and resolve/manage potential risks
  - all day-of-surgery admissions are staggered starts – with patients suitable for accelerated recovery scheduled earlier in the day
  - optimised anaesthesia and theatre processes to support early mobilization and effective pain relief
  - physiotherapy available 7 days a week and 12 hours a day
  - dedicated social worker to support discharge

Delivery model

- EUOSH is part of Emory Healthcare, a not-for-profit clinically integrated network of specialist teaching hospitals, community hospitals and primary healthcare facilities
- It operates a mixed contractual model with some employed and some self-employed surgeons

Background and history

- Emory Healthcare was created in 1997 to unite Emory's hospitals and clinic into one system of care. It has continued to grow through a series of mergers and acquisitions
- Emory University Hospital has operated in Atlanta since the early 20th century
- It is now the largest hospital system in Georgia

Health system context

- The USA has a mixed model of insurance coverage, with public funds covering the elderly, disabled and low income groups through CMS-administered Medicare and Medicaid programmes managed by federal and/or state governments
- Emory serves patients from all insurance groups

CMS, Centers for Medicare and Medicaid Services

[1] This case review was externally commissioned. Sources included site visits, interviews and reviews of company reports/information systems. Specific additional sources are given where appropriate.

EUOSH is part of the Emory integrated hospital network

Overview

- Clinically integrated network of AMC specialist hospitals, community hospitals and primary healthcare facilities, established in 1997:
  - six hospitals
  - 200 provider sites
  - 1,800 physicians in 70 specialties
  - 220 primary care physicians
- Focus on patient- and family-centred care within a single, comprehensive system
- Largest hospital system in Georgia
- Mix of directly employed and private practice physicians

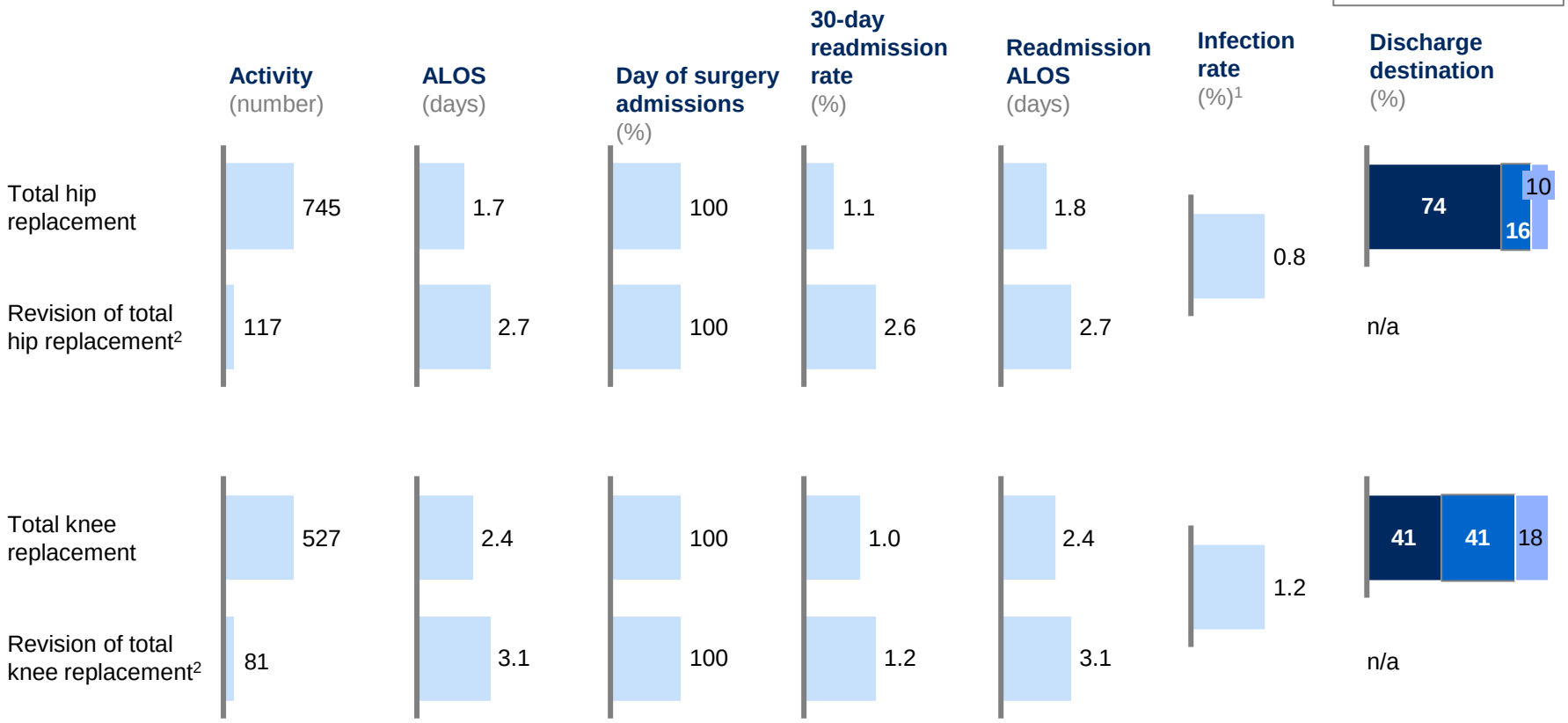
Overview of EUOSH

- Single, inpatient teaching site for elective orthopaedic surgery – organisationally connected to major university hospital for research, technology and links to all other specialties
- Elective orthopaedic and spinal activity now concentrated on this site (transferred from Emory University Hospital)
- Provides:
  - seven operating theatres
  - X-ray services
  - inpatient services
  - laboratory services
  - physiotherapy services
- Outpatient clinics and services are provided on a separate site (Emory Orthopaedics and Spine Center) with physicians working across both sites
- 13 Board-certified specialist surgeons:
  - six spinal specialists
  - four joint replacement specialists
  - three other ortho sub-specialists
- Dedicated and specialist orthopaedic and spine nursing staff
- Specially designed orthopaedic spaces with furniture customized for joint and spine patients

AMC, academic medical centre

EUOSH: Volume and outcomes for selected joint replacement pathways

Data for 2014



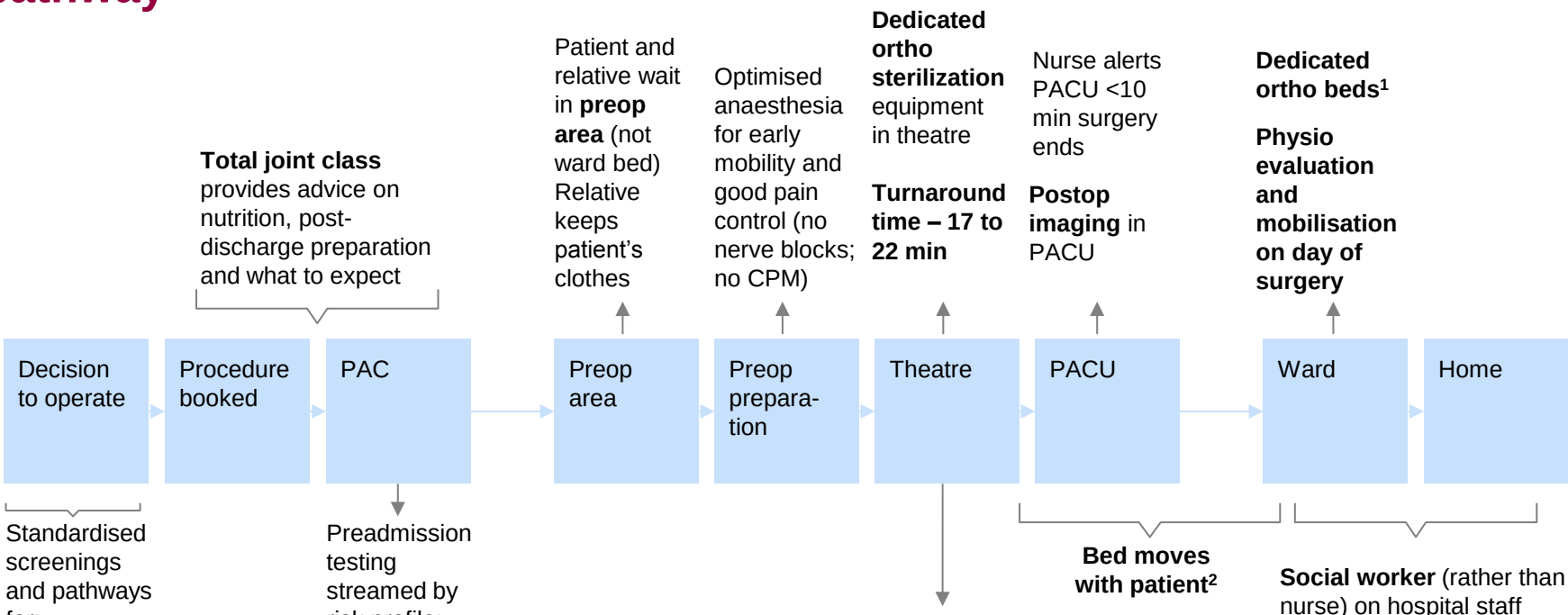
ALOS, average length of stay

[1] Combined rate for primary replacement and revisions

[2] Most revisions are referrals from other providers

Surginet information system

EUOSH's approach to optimising the joint replacement pathway



PAC, preassessment clinic; PACU, post-anaesthesia care unit; CPM, continuous passive motion; HER, electronic health record; TRIAD, targeted review intending to advocate discharge.

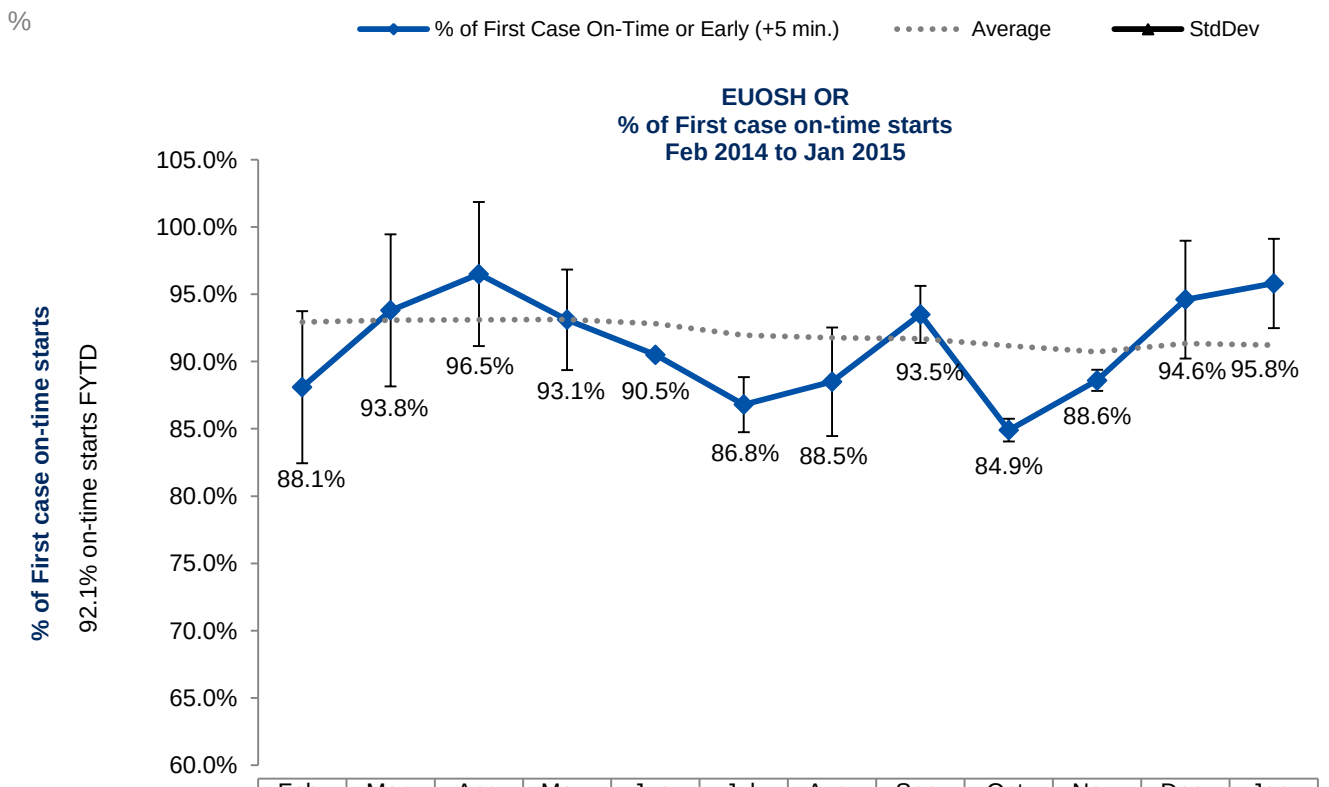
[1] Low bed occupancy (68%) as patient flow is optimized and delayed discharges are avoided.

[2] Patient stays in same transportable bed to minimize joint movement in period immediately post surgery.

EUOSH has increased on-time starts in theatre from 58% to >95% in the last few years

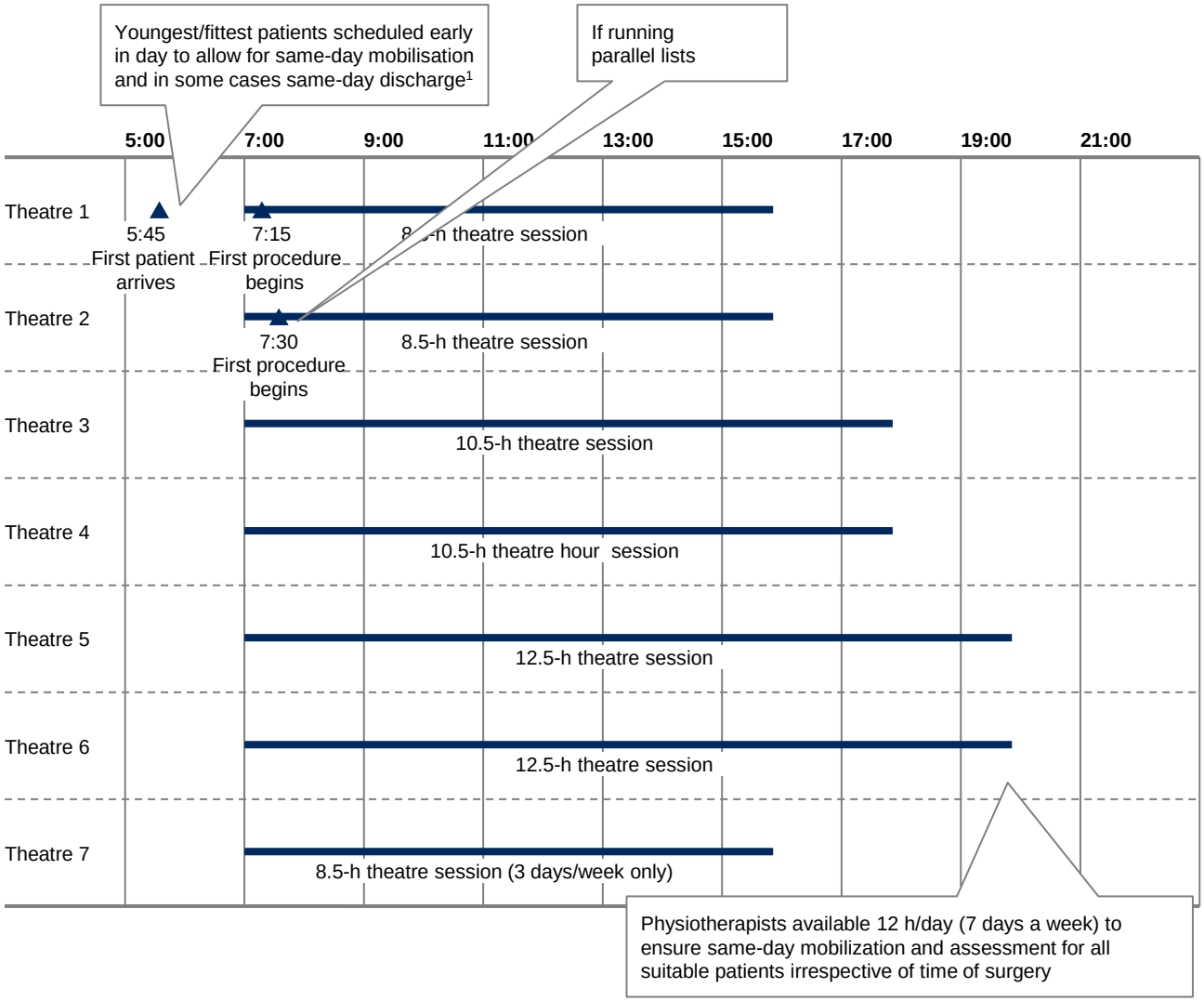
- **Multi-disciplinary 'task force' assigned to assess every aspect of patient flow** and surgical team processes to improve on-time start rate:
  - set clear **common mission** and desire to do things differently
  - first patient called in earlier to ensure all preop activities complete before scheduled start time in theatre
  - **variable opening times** for operating theatres
  - young, **medically-fitter patients scheduled earlier** on the list
  - **no preadmission testing on day of surgery** (all data must be complete and verified by midday on day before surgery) – this had been the root cause of ~15% of delays
- Support and sustain culture of **professional pride** in running theatres effectively
- Surgeons will engage (with on-time starts) if all non-surgical aspects run efficiently

Monthly average on-time starts in elective orthopaedic theatres, 2014/15



	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15
% of First Case On-Time or Early (+5 min.)	88.1%	93.8%	96.5%	93.1%	90.5%	86.8%	88.5%	93.5%	84.9%	88.6%	94.6%	95.8%
Average	92.9%	93.1%	93.1%	93.1%	92.8%	92.0%	91.8%	91.7%	91.2%	90.7%	91.3%	91.2%
StdDev	6%	4%	2%	2%	2%	3%	1%	4%	6%	3%	4%	1%

EUOSH approach to orthopaedic theatre scheduling



Scheduling approach

- Theatre blocks assigned to ortho or spinal 3 months in advance – then allocated to individual surgeons by the chief medical officer (CMO)
- ORBC software automatically assigns time to procedure based on individual's historical average
- Surgeon adjusts it if needed based on patient profile
- Surgeon and department-level utilization reviewed weekly and monthly by full multi-disciplinary executive team including CMO, data lead, bed manager, heads of nursing (surgical and inpatient) and radiology. Chief surgeon follows up with individuals if:
  - utilization below expected level
  - theatre over-runs exceed expected limits
- Physicians paid per procedure (not per theatre block)

Impact

- Four to five primary joint replacement procedures per 8.5-h session (or up to 10 if running parallel lists)
- Turnaround time of 17 to 22 min
- >95% on-time starts
- 82% to 90% theatre utilisation[2]

ORBC, Operating Room Benchmarking Collaborative.

[1] Small proportion (single digit %) of anterior hip patients discharged on day of surgery; also smaller proportion of primary knee replacement patients

[2] Monthly utilization rates: December 2014 = 90%; January to March 2015 = 82%

EUOSH uses dashboards to monitor quality of care

Nursing Quality Index ™

Third Quarter, Fiscal Year 2015 (March 2015 - April 2015)

	Desired Direction	EUOSH FY15 Q3 Actual	EUOSH FY15 Target	EUOSH Q3 % of Units at Target	EUOSH % Units at Target ≥ 5 of 8 QTRS
Patient Satisfaction: Overall Rating of Nursing Care	up	89	50	66.70%	66.67%
Patient Satisfaction: How well pain was controlled	up	85	50	66.70%	100.00%
Hospital Acquired Pressure Ulcer Stage II & Above Prevalence	down	0.00%	0.00%	100.00%	100.00%
Falls with Injury per 1,000 patient days	down	0.00	0.17	100.00%	100.00%
Catheter Associated Urinary Tract Infections per 1,000 Catheter Days	down	0.00	0.17	100.00%	66.67%
Central Line Associated Blood Stream Infections per 1,000 Line Days	down	0.00	0.00	100.00%	100.00%
RN Certification	down	35.23%	17.00%	100.00%	100.00%
RN Education (BSN or Higher)	up	62.22%	56.40%	83.30%	66.67%
*Nursing Engagement Overall	up	73.6	70.8	*	57.14%
**Research Studies in progress with Nurse PI/Co-PI	up	1	1	**	**
# of Indicators at Target:				10 of 10	

- Quality dashboards and real-time monitoring of information is used extensively to inform and enhance performance management
- Performance management is part of a broader programme to transform care delivery with a shared set of goals:
  - **improve consistency** in the delivery of and quality of care
  - **involve patients and families** in every aspect of the healthcare delivery system
  - **decrease medical errors and infection rates**
  - improve **communication**
  - increase **patient and employee satisfaction**
  - improve **facility design** and **educational information**

EUOSH's approach to supporting surgeons to utilise theatre time most effectively

Performance review embedded in daily work …

Twice-daily multi-disciplinary theatre team meetings

9:00am meeting:

- case-by-case review
- plan for day
- review of previous day's performance looking at actual vs expected utilisation/LOS data, etc

End-of-day core team – wrap up and review:

- review of delivery vs plan
- what do we need to do differently tomorrow?
- daily review of issues, knowledge sharing and collective problem-solving

… and in annual performance incentives …

Performance is clearly and directly related to pay structure

Physician pay components:

- base salary
- bonus for volume adjusted for casemix
- eligibility for bonus dependent on meeting quality thresholds

Theatre overhead charge to surgical faculty is lower if theatres are used efficiently, meaning there is a bigger pot from which to pay for individual incentives

… but organisational culture is also key

Organisational culture emphasises professional pride and quality

All staff are engaged in identifying and implementing solutions to issues

Organisation fosters collective accountability and recognition for delivery of patient- and family-centred, high value care

Surgeons like working in an efficient environment where processes run smoothly and resources (including their own time) are used efficiently

Enablers

- Ability to pay surgeons for performance based on volume and mix of procedures[1] (not surgical blocks)
- Real-time data for next-day review
- Collaborative team working for collective accountability, knowledge sharing and support

[1] Other staff are paid an hourly rate (not adjusted for volume)