King's Health Partners

HFMA Value Masterclass | Value in Practice

hfma

HEALTHCARE COSTING FOR VALUE INSTITUTE

Prof John Moxham, Mr Toby Colegate-Stone,
Dr Lucinda Gabriel, Joseph Casey | 28 February 2018

Our mission – translate cutting-edge research into patient care, delivering **improved outcomes for patients** locally and globally

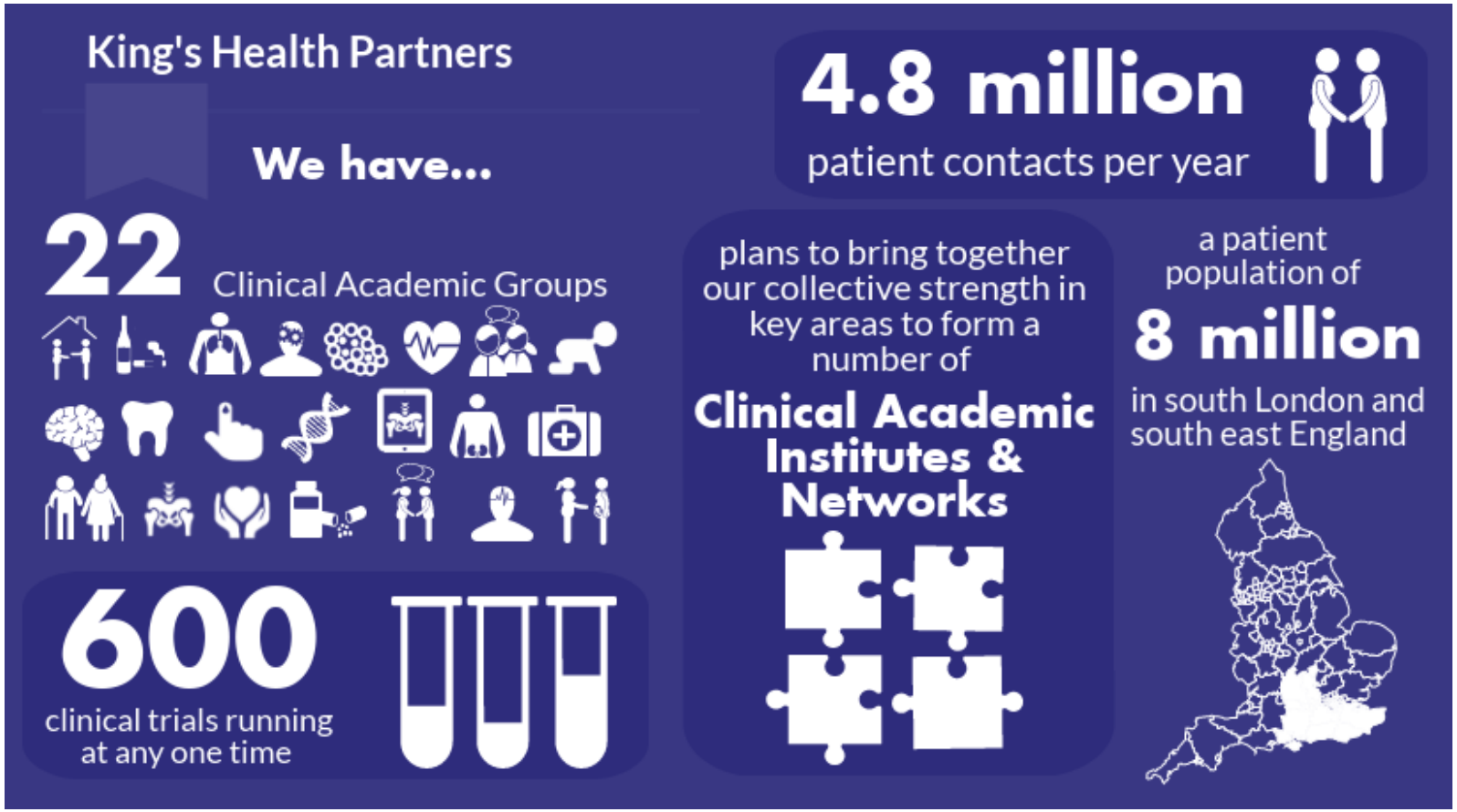
KING'S College LONDON

NHS Guy's and St Thomas' NHS Foundation Trust

NHS King's College Hospital NHS Foundation Trust

NHS South London and Maudsley NHS Foundation Trust

Delivered through clinical academic groups – focus on integrating **mind and body** and implementing **value based healthcare**



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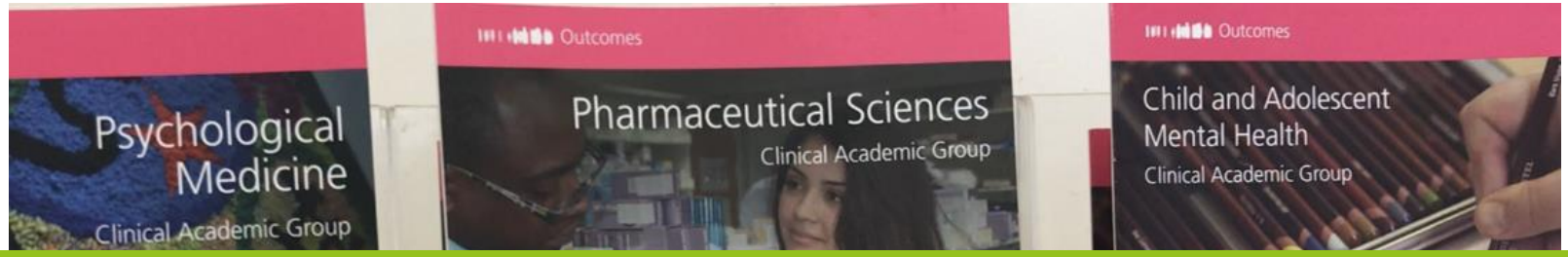
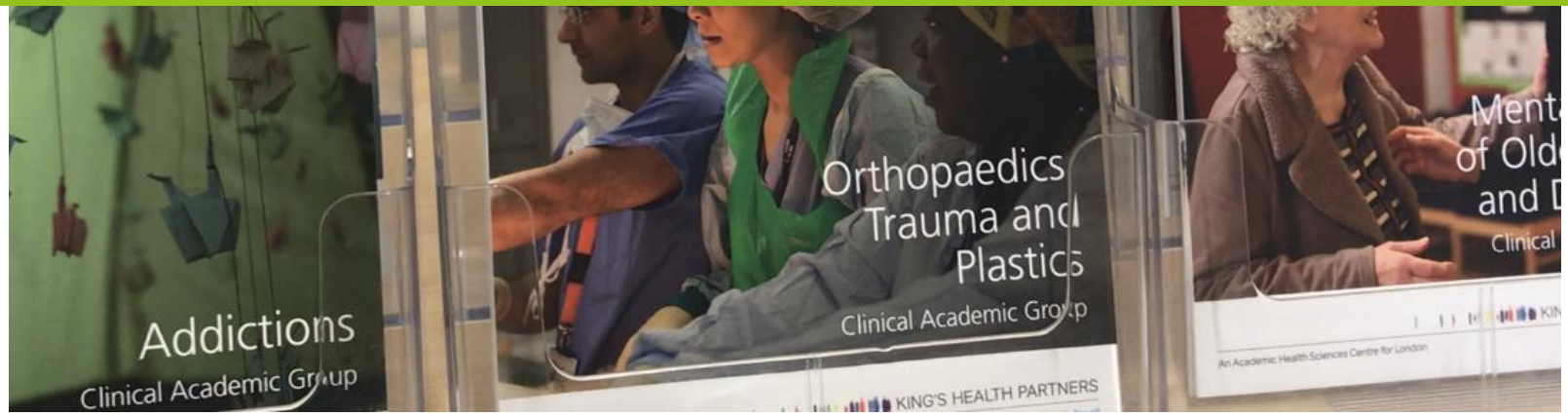
A value-driven NHS can only be achieved through sharing and use of high quality data with clinical teams and with patients



> We want to improve health for all patients by ensuring that the quality of clinical outcomes and access to care are not affected by deprivation, geography or demographic profile. Value based healthcare will drive quality and sustainability by continually focussing on, and measuring, outcomes that matter to patients and carers alongside understanding the true cost of care.



Value in Practice – sharing lessons and challenges from our experience in orthopaedics

Mr Toby Colegate-Stone

Our healthcare conundrum

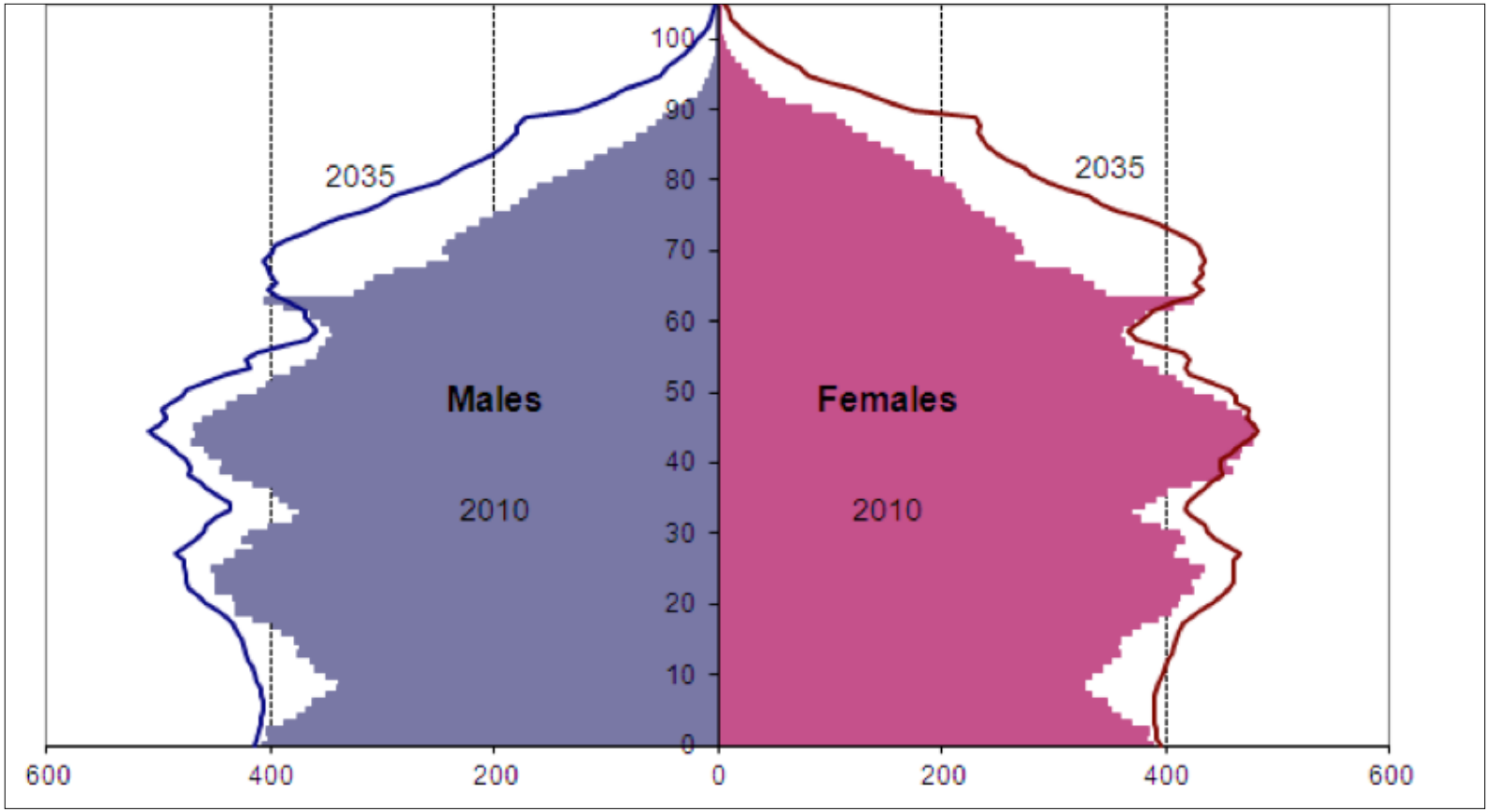
All providers, commissioners and payers of healthcare face escalating costs:

- Population size
- Ageing population
- Increasing complex co-morbidities
- Increasing technology & ability potential to treat disease

Musculoskeletal disorders – the value challenge

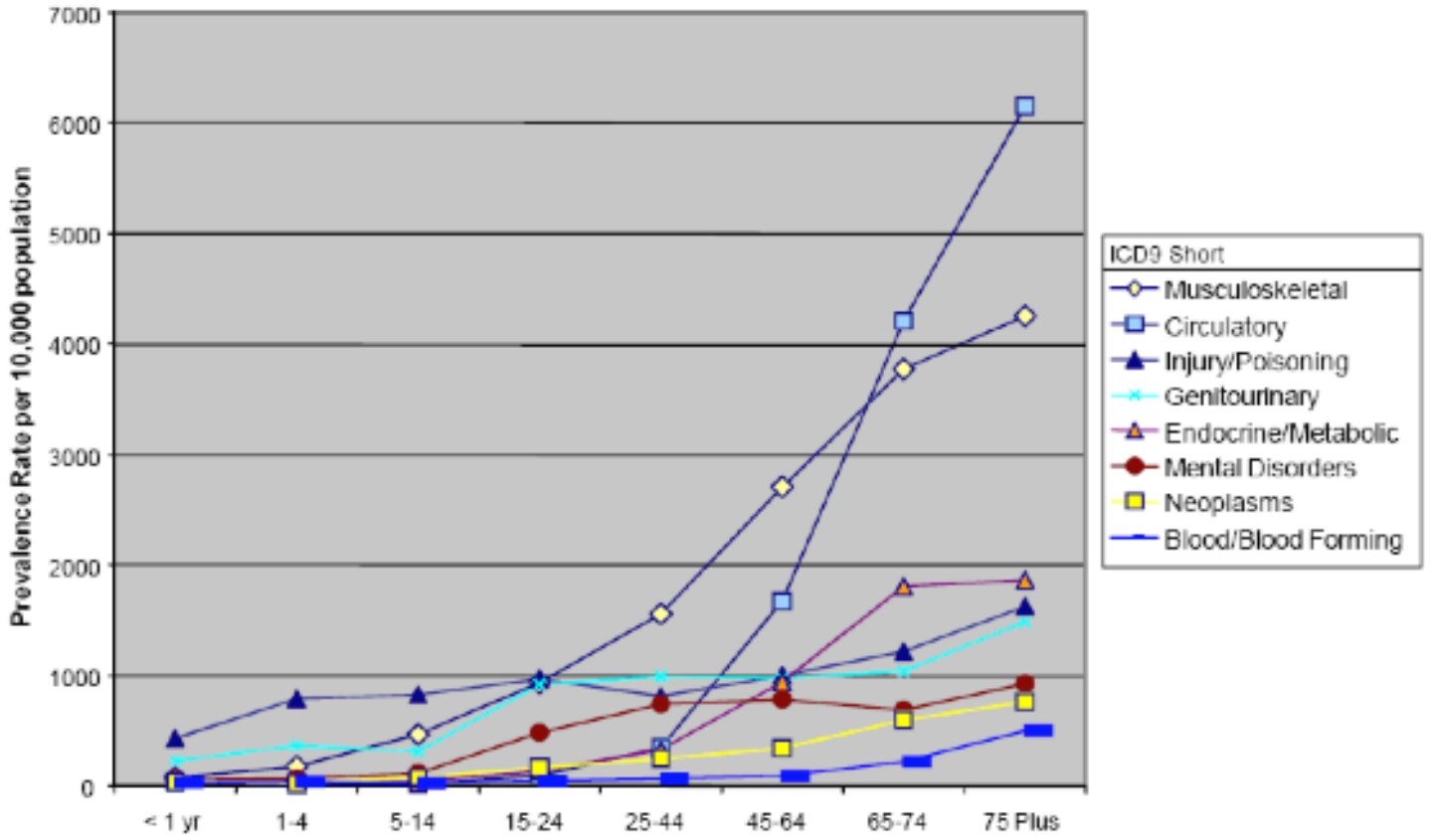
- MSK related disorders impact us from every perspective
- Approximately 15 million people in the UK have a MSK condition
- MSK annual NHS budget circa £10 billion
- Greatest cause of sick leave & related loss of productivity to the economy
  - Estimated annual cost of £18 billion
  - Over 30% of all disability allowance claims are related to MSK disorders, which is greater than the sum of mental health, cardiovascular disease, stroke and respiratory disease
- 25% of the population consults at least once a year with a MSK problem
- More than 25% of all surgical interventions undertaken by the NHS are for MSK issues
- Trauma
  - In the guise of major trauma it also accounts for the greatest cause of mortality in the under 40's
  - Hip fracture is the 2nd ranking cause mortality at 30 days after emergency admission
- The demands that MSK disorders place on healthcare are increasing at every point of clinical contact, and unfortunately they only have an upward trajectory

Orthopaedics – a growth business



Estimated and projected age structure of the UK population, mid-2010 and mid-2035
Office for National Statistics: http://www.statistics.gov.uk

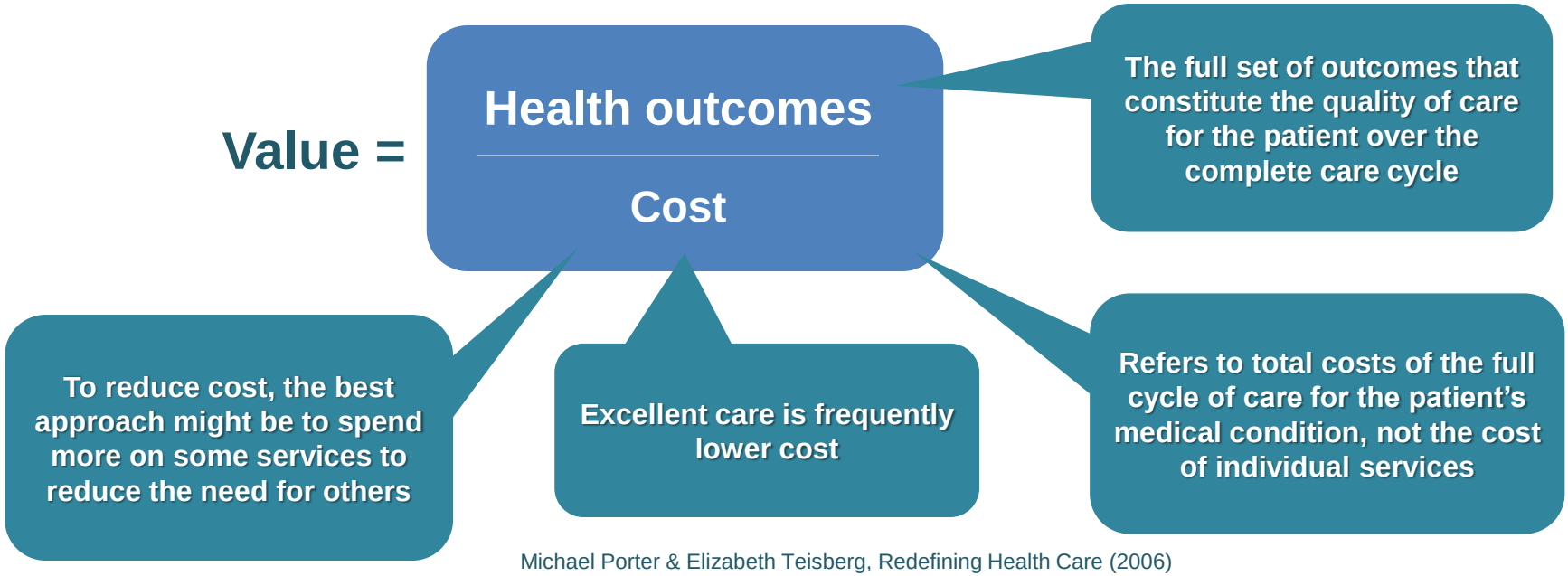
Medical concerns of an aging population



Source: RCGP, Birmingham Research Unit, 2006

Value in healthcare

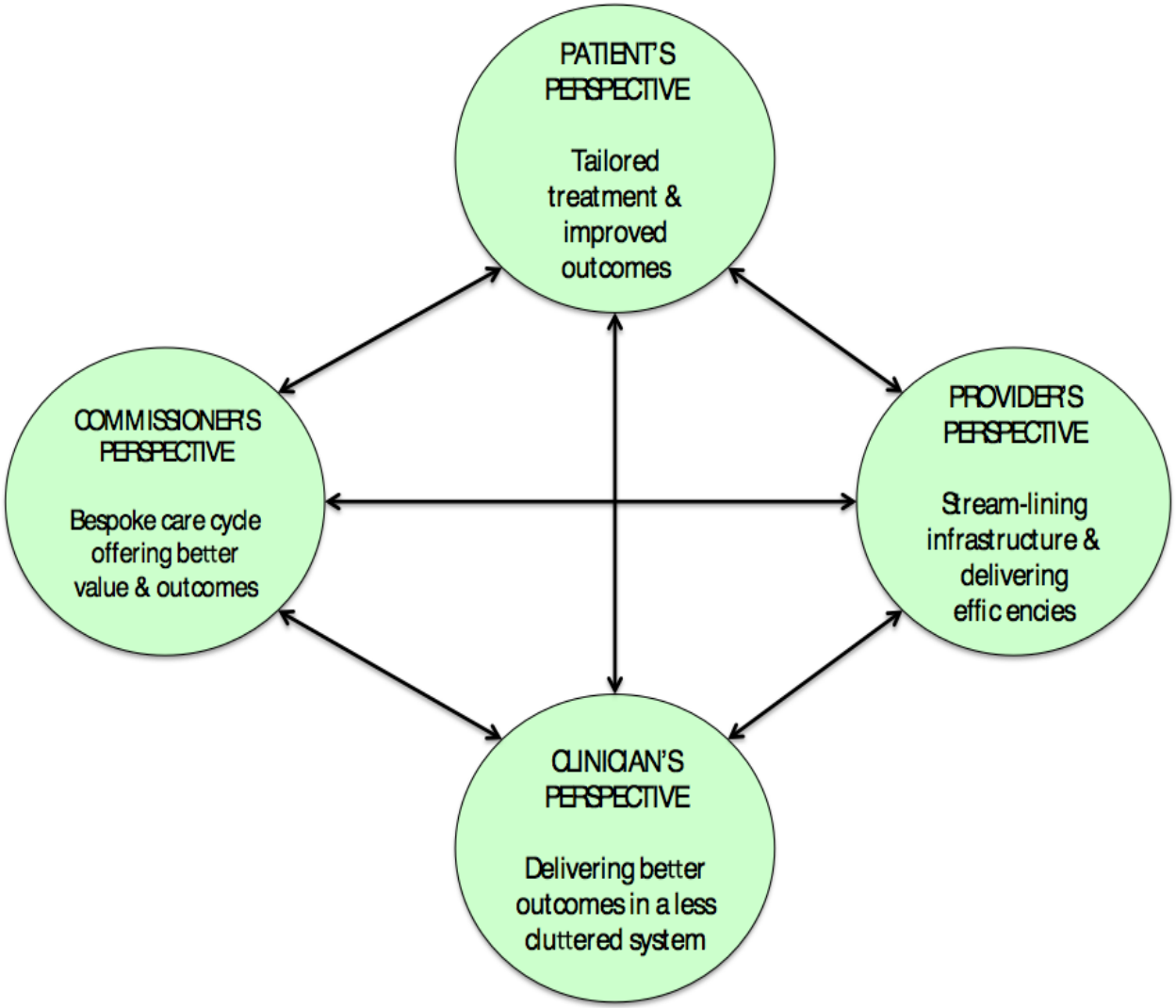
- **Value** is defined as **Outcomes relative** to the **real costs** it takes to deliver those outcomes
- **Outcome improvement** without understanding the **true costs of care** is unsustainable and does not help effective allocation of limited resources
- **Cost reduction** without regard to the **Outcomes achieved** is dangerous and self-defeating



Michael Porter & Elizabeth Teisberg, Redefining Health Care (2006)

Engaging with our patients – what do they deserve?

- Deserve to be placed first and at the centre of their care
- Deserve integrated multidisciplinary care
- Deserve good outcomes
- Deserve organised care


PATIENT'S PERSPECTIVE
Tailored treatment & improved outcomes
COMMISSIONER'S PERSPECTIVE
Bespoke care cycle offering better value & outcomes
PROVIDER'S PERSPECTIVE
Stream-lining infrastructure & delivering effic encies
CLINICIAN'S PERSPECTIVE
Delivering better outcomes in a less cluttered system

Value based healthcare models in trauma and orthopaedics

- Conditions that lend themselves to a more linear pathway are easier wins
- Complex care is less linear
- Non-Major Trauma: Hip Fracture (FNOF), Ambulatory Trauma Surgery
- Routine Elective Orthopaedics

Value in Practice – *hip fracture case study*

Mr Toby Colegate-Stone

Hip Fracture – how big is this problem?

- Upward trajectory of our ageing population
- Population aged 65 and over is predicted to increase from 17% to 23% by 2035
- UK annual number of patients with FNOF is projected to rise to 101,000 by 2020
- Health and social care information centre (HSCIC) data indicates FNOF patients to have the second highest 30-day mortality rates following emergency admissions, just after stroke patients
- It has significant fiscal consequences. The approximate annual expenditure relating to FNOF alone is £2.2 billion by 2020

Who is the average fractured neck of femur patient?

- In their 80's
- Have multiple chronic medical co-morbidities
  - i.e. someone with complex chronic medical & social needs that also has a FNOF
- Acutely physiologically vulnerable due to both the facture and surgery
- Is admitted to an outlier ward
- Has to wait for a bed on the specialist Trauma & Orthopaedics / Ortho-geriatric ward

30 day mortality comparisons

HSCIC HOSPITAL EPISODE STATISTICS 30 DAY MORTALITY SECONDARY TO EMERGENCY ADMISSIONS

Rank	**Diagnosis**	Mortality rate per 100,000 circa	**Admission location**
1st	Stroke	18,000	Acute Stroke Unit
2nd	FNOF	7,000	? 67% ADMITTED TO OUTLIER WARDS
3rd	MI	5,000	Coronary Care/ Acute medical unit

HARVARD | BUSINESS | SCHOOL

JANUARY 4, 2012
FOR ONE-TIME USE ONLY
IN VALUE-BASED HEALTHCARE
IMMERSION PROGRAM
JANUARY 2012

MICHAEL E. PORTER
JAMES MOUNTFORD
KAMALINI RAMDAS
SAMUEL TAKVORIAN

Reconfiguring Stroke Care in North Central London

I have heard such great things about the way we treat stroke patients in London and the role that this hospital plays that I wanted to come to see it for myself.

– Prime Minister David Cameron, speech at UCLH, 7 June 2011

In 2011, Dr. Charles Davie, consultant neurologist and clinical lead for the North Central London Stroke Network, reflected on the progress made in reconfiguring stroke care in London. Two years earlier, as stroke lead for The Royal Free Hospital, he brought together Royal Free Hospital and University College London Hospital (UCLH), two historically competitive institutions, to create a single, shared hyper-acute stroke center serving all of North Central London. Staffed by stroke specialists drawn from all four acute stroke providers in North Central London, the unit saw higher volumes and achieved better outcomes compared to the units that existed previously.

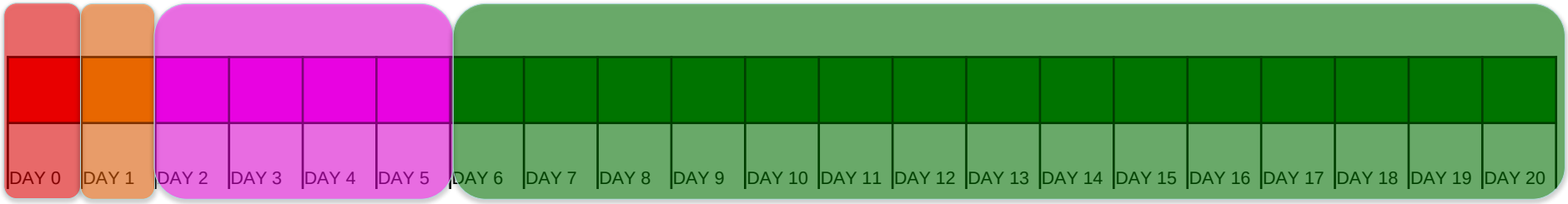
Dr. Davie wondered how this new model could be spread to benefit patients from areas outside of London. In addition, the next step was to examine ways to extend the model earlier in the stroke care cycle.

Aim

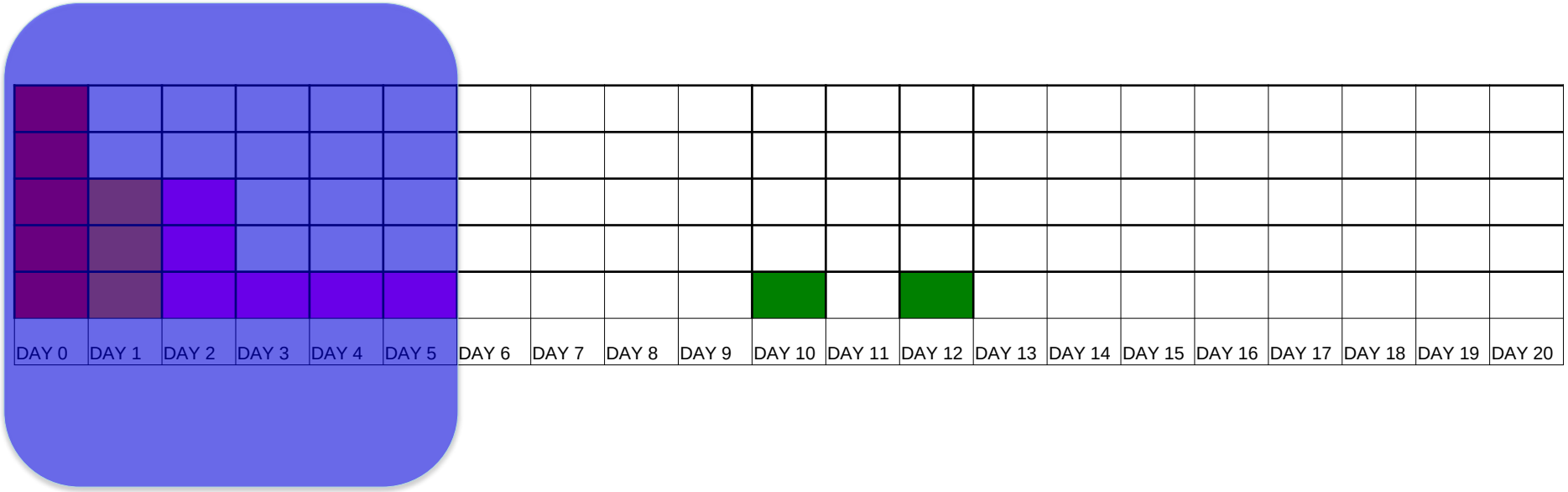
- VBHC re-orientation of service about the condition
- Formation of an integrated practice unit for patients with FNOF
- Managing this cohort on a condition rather than departmental basis and wrap the complex multidisciplinary care that they require about them

Process map overview

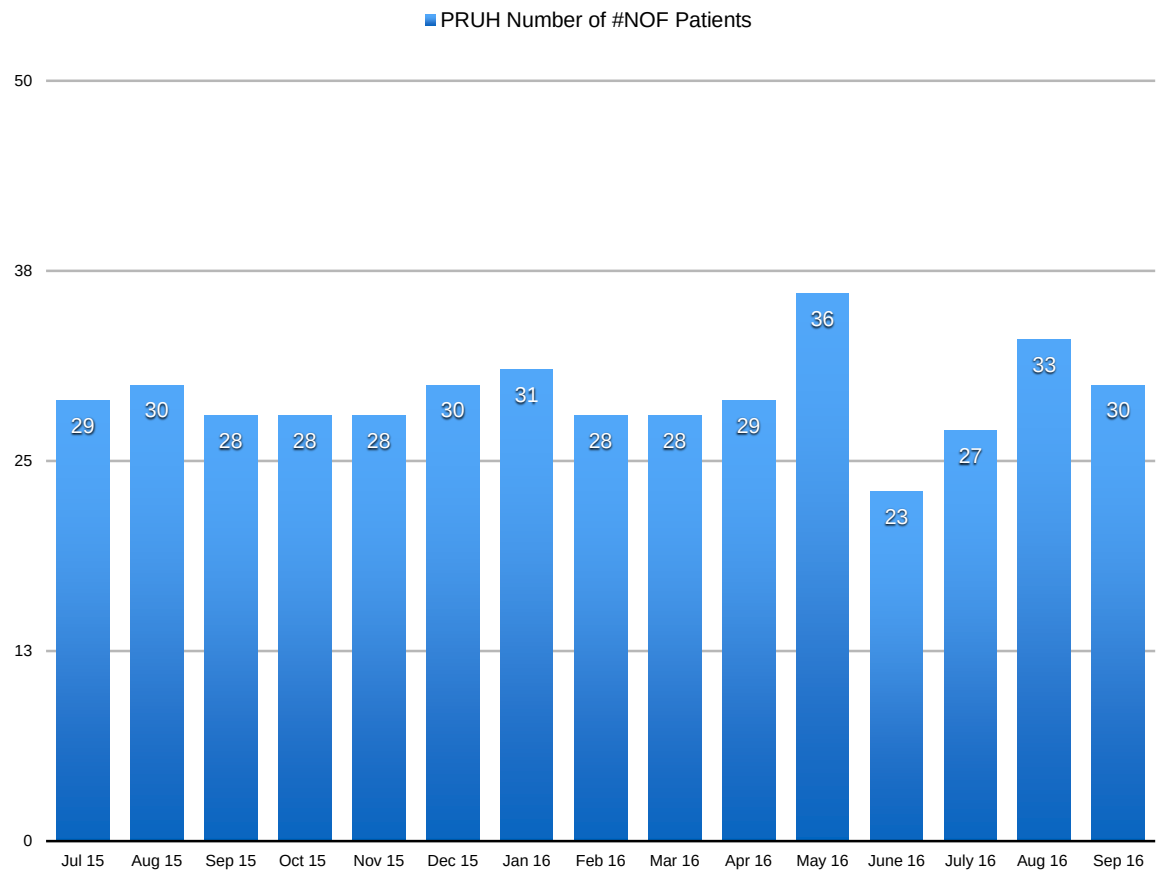
SURGERY **REHAB**

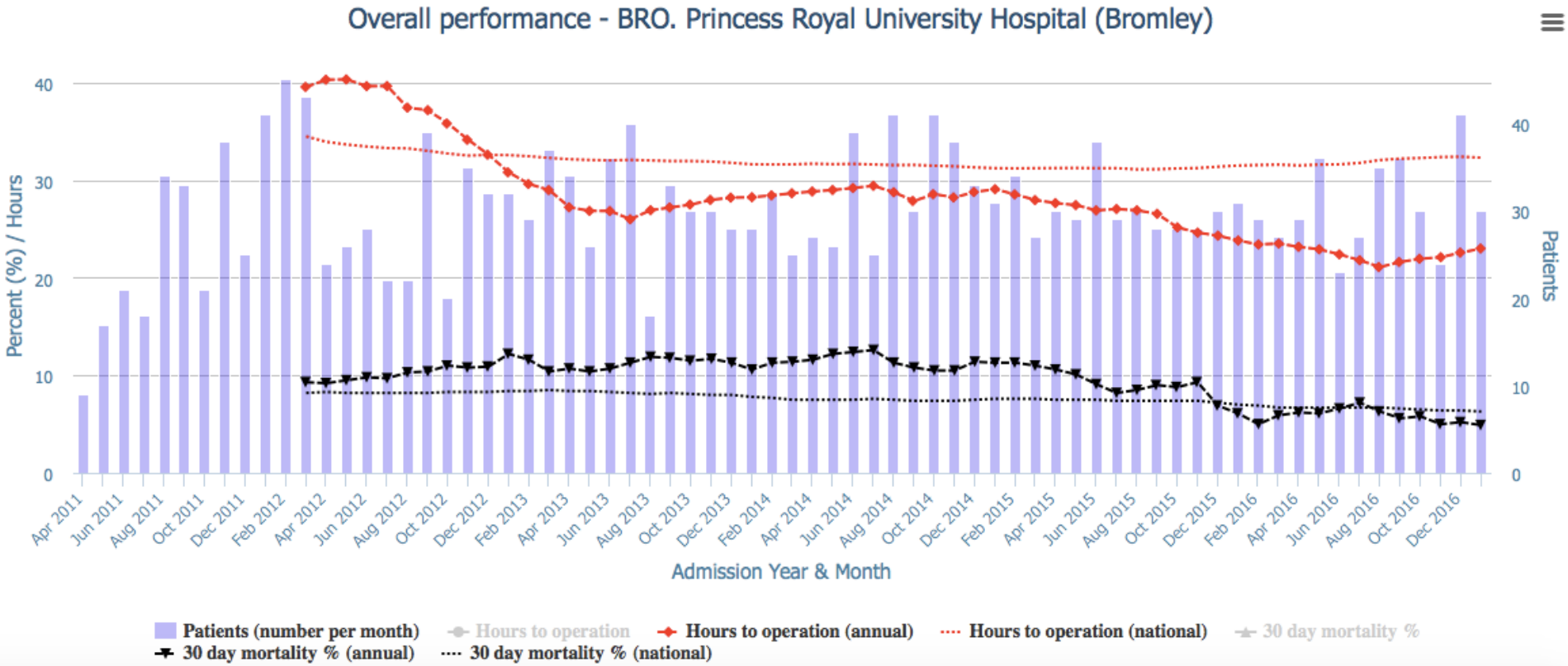


ACCESS & RESUS **ACUTE RECOVERY**

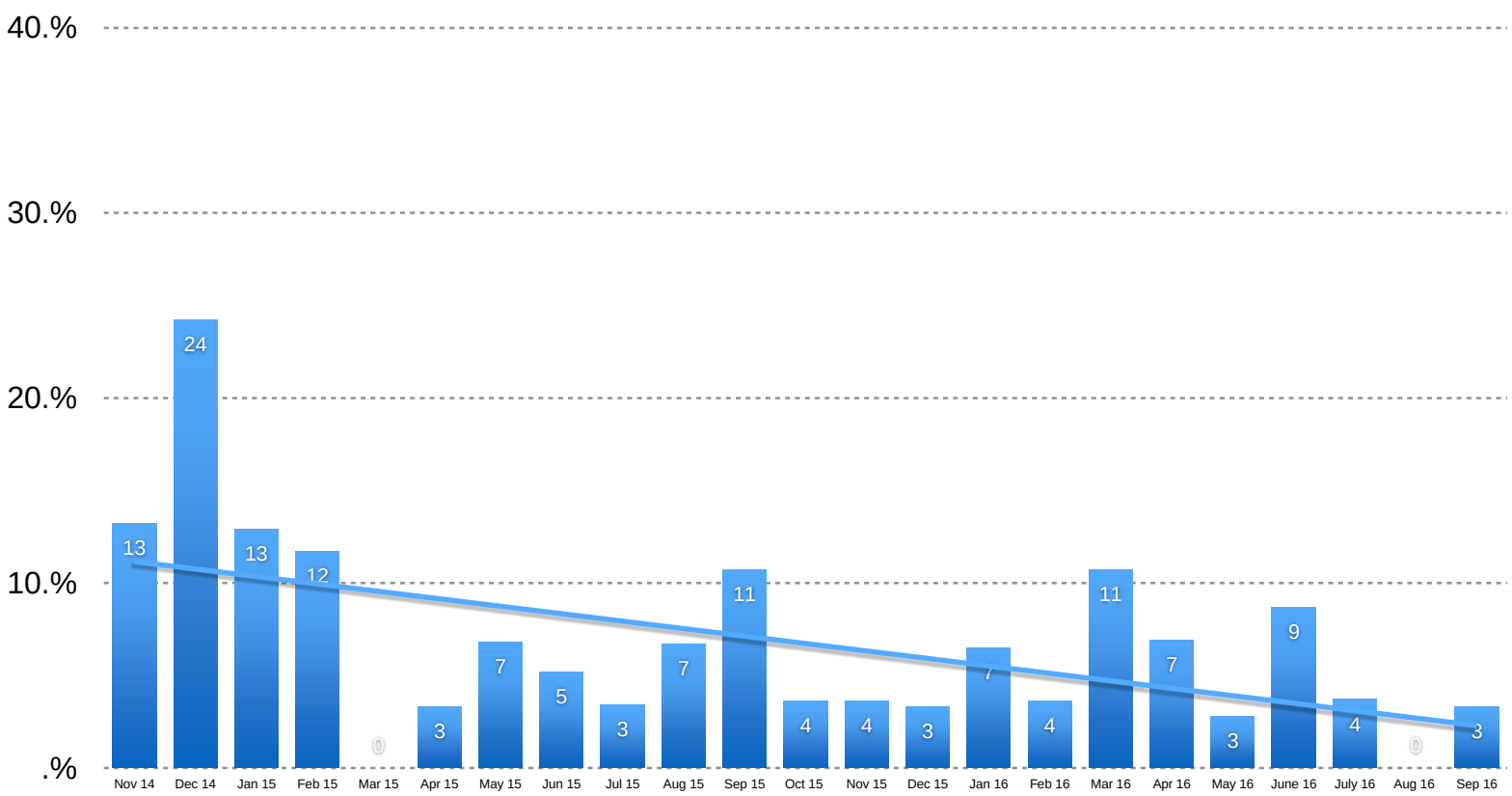

DAY 0
DAY 1
DAY 2
DAY 3
DAY 4
DAY 5
DAY 6
DAY 7
DAY 8
DAY 9
DAY 10
DAY 11
DAY 12
DAY 13
DAY 14
DAY 15
DAY 16
DAY 17
DAY 18
DAY 19
DAY 20

Actual number of FNOF patients

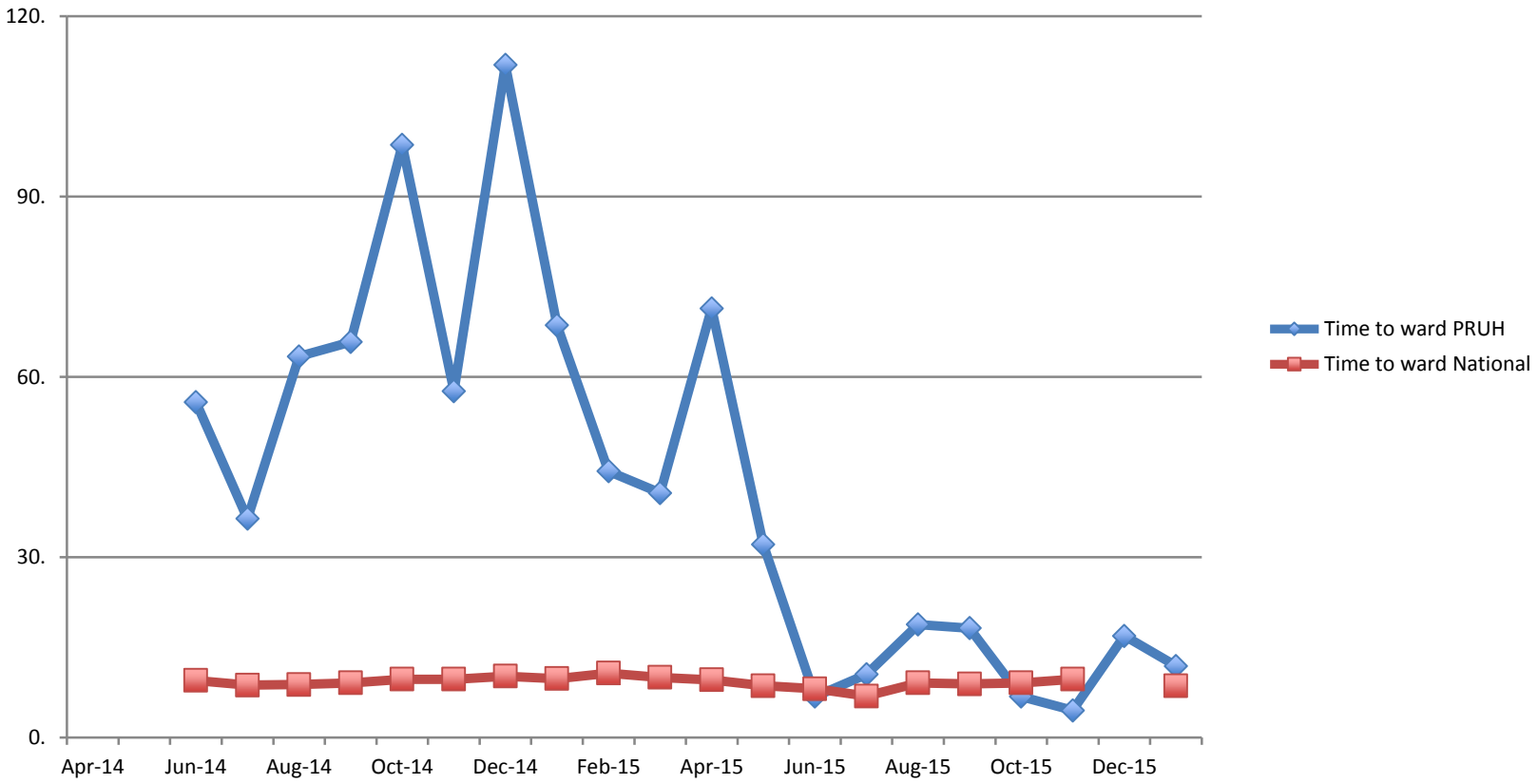



Overall performance - BRO. Princess Royal University Hospital (Bromley)
Percent (%) / Hours
Patients
Admission Year & Month
Patients (number per month)
Hours to operation
Hours to operation (annual)
Hours to operation (national)
30 day mortality %
30 day mortality % (annual)
30 day mortality % (national)

Crude in-hospital mortality as a percentage



Time to specialist ward



Length of Stay

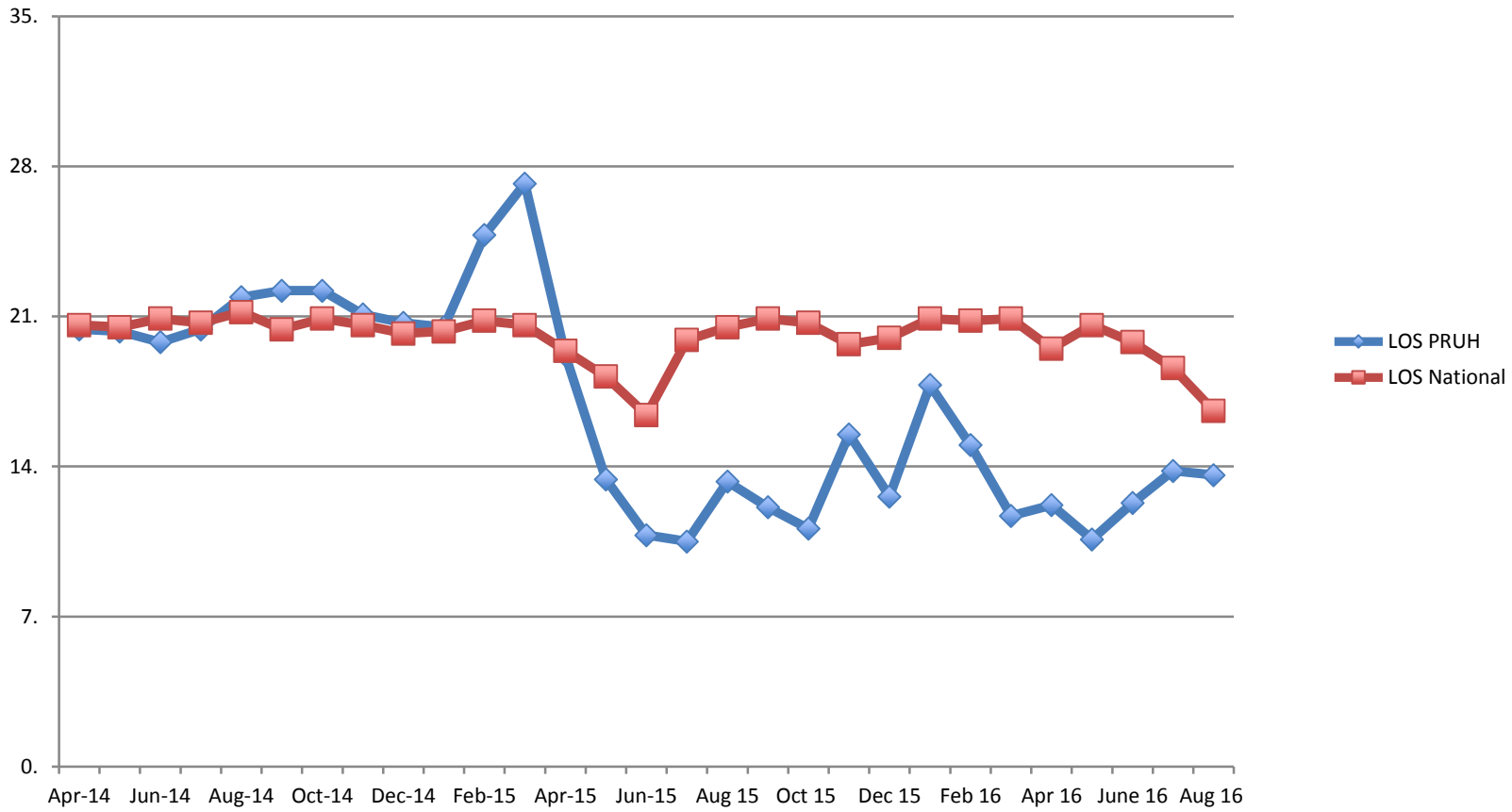
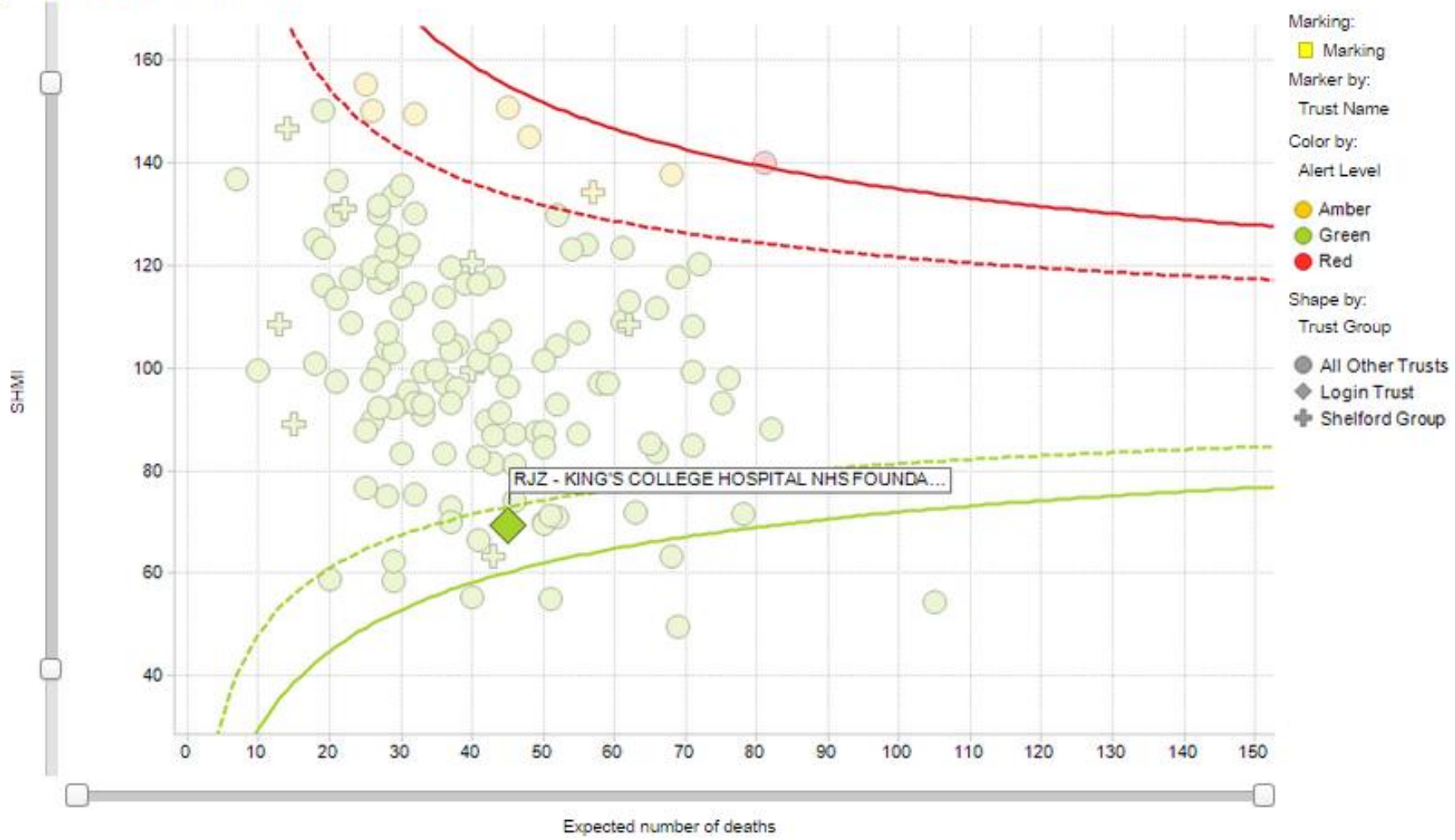
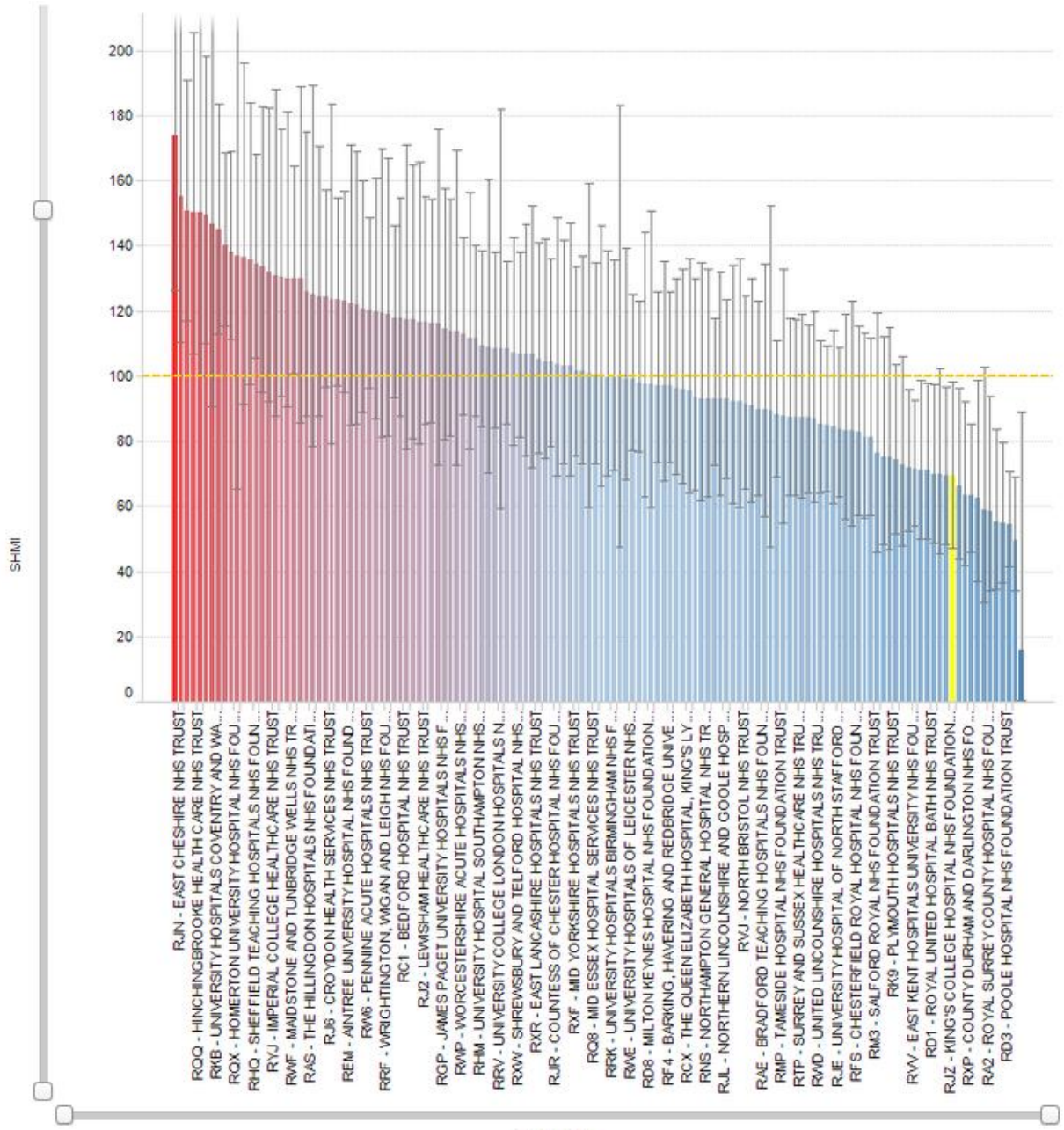
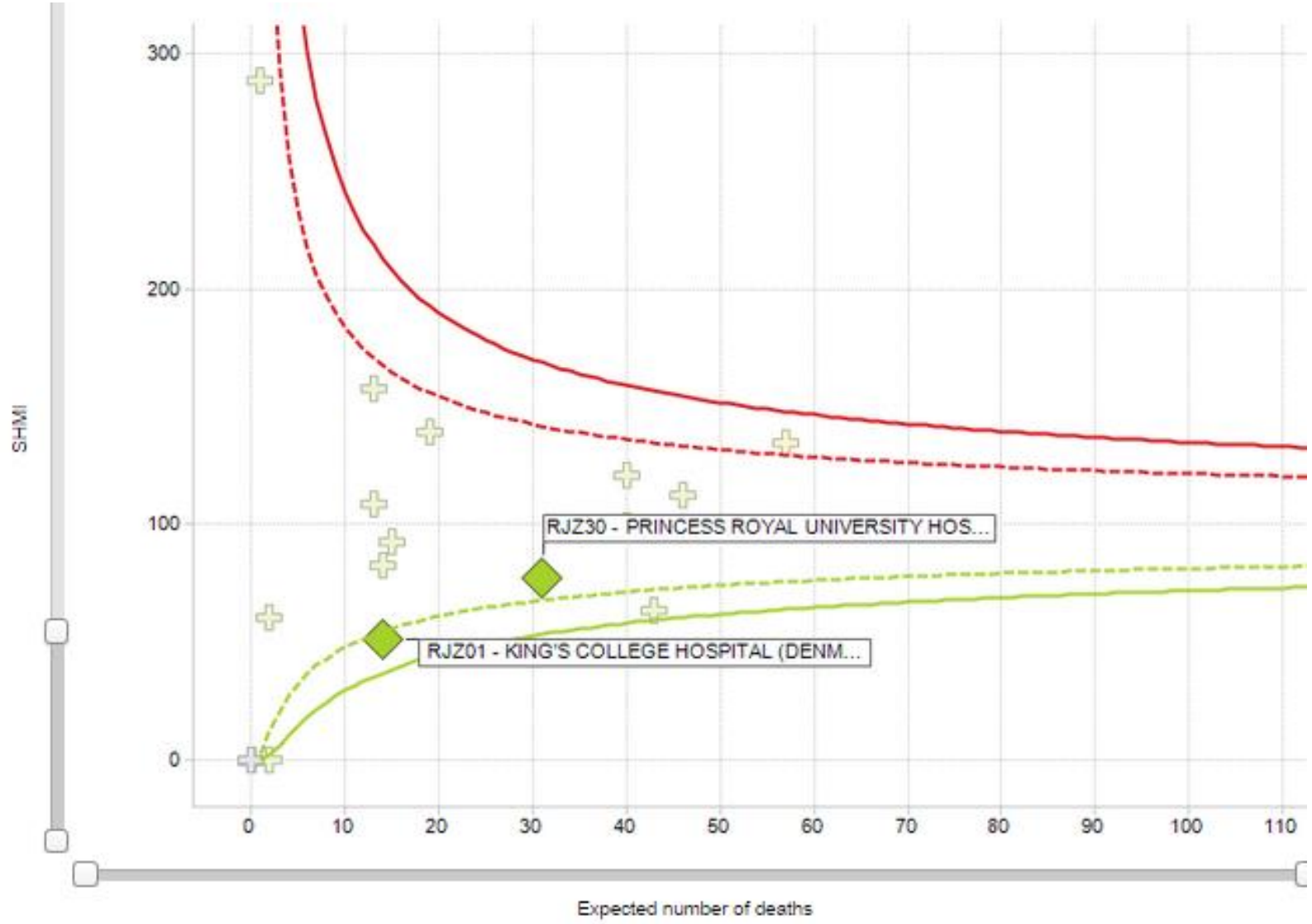


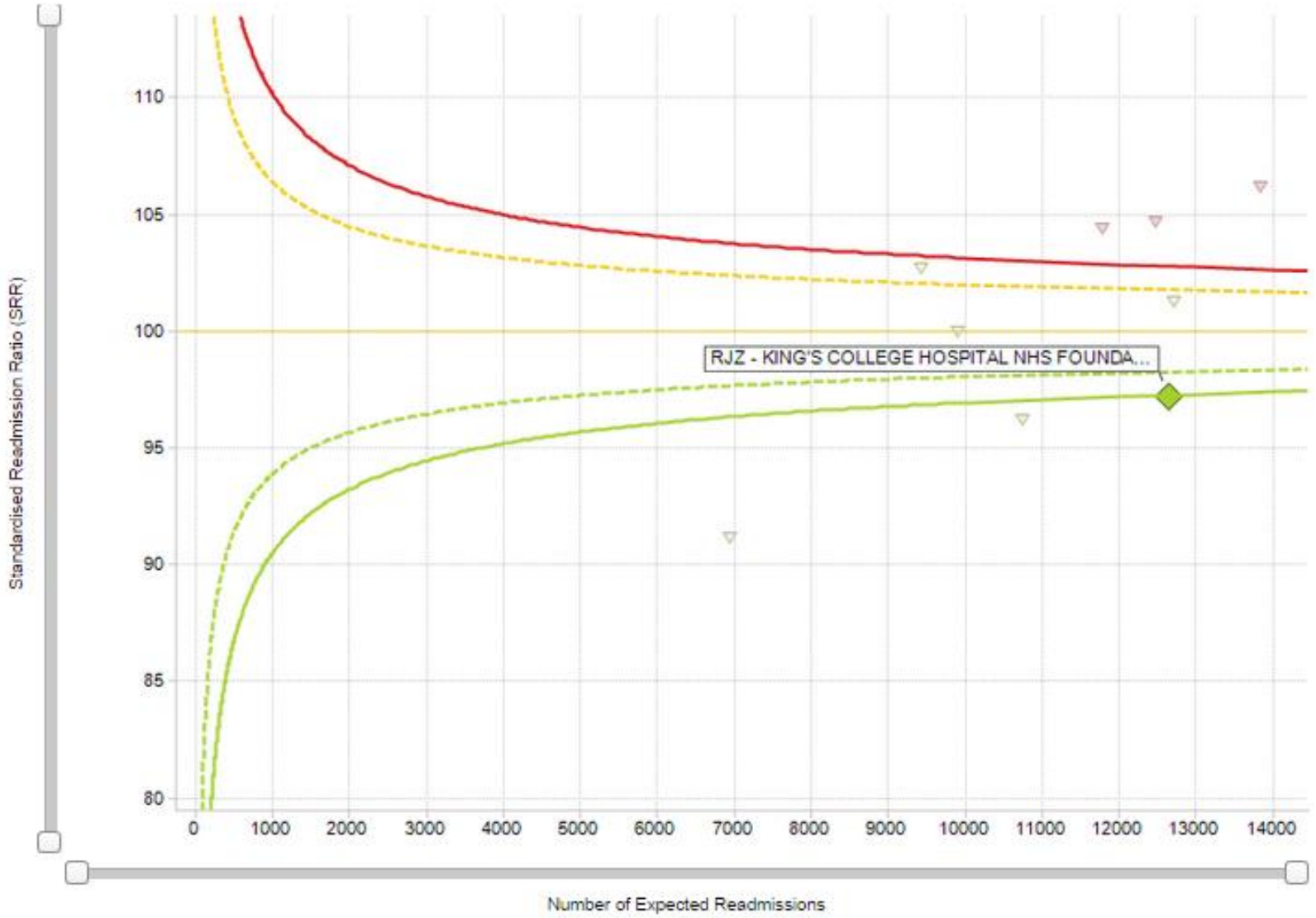
Figure 1.2: Poisson Distribution (PD) Funnel Plot

Please note that funnel plot is only valid when SHMI score is 100 for all the organisations (shown below) as a whole. It can be verified through highlighting all data items and checking grand total in Tab 3 breakdown table.




SHMI
200
180
160
140
120
100
80
60
40
20
0
RJN - EAST CHESHIRE NHS TRUST
RQQ - HINCHINGBROOKE HEALTH CARE NHS TRUST
RKB - UNIVERSITY HOSPITALS COVENTRY AND WA...
RQX - HOMERTON UNIVERSITY HOSPITAL NHS FOU...
RHQ - SHEFFIELD TEACHING HOSPITALS NHS FOUN...
RYJ - IMPERIAL COLLEGE HEALTHCARE NHS TRUST
RWF - MAIDSTONE AND TUNBRIDGE WELLS NHS TR...
RAS - THE HILLINGDON HOSPITALS NHS FOUNDATI...
RJ6 - CROYDON HEALTH SERVICES NHS TRUST
REM - MANTREE UNIVERSITY HOSPITAL NHS FOUND...
RW6 - PENNINE ACUTE HOSPITALS NHS TRUST
RRF - WRIGHTINGTON, WIGAN AND LEIGH NHS FOU...
RC1 - BEDFORD HOSPITAL NHS TRUST
RJ2 - LEWISHAM HEALTHCARE NHS TRUST
RGP - JAMES PAGET UNIVERSITY HOSPITALS NHS F...
RWP - WORCESTERSHIRE ACUTE HOSPITALS NHS...
RHM - UNIVERSITY HOSPITAL SOUTHAMPTON NHS...
RRV - UNIVERSITY COLLEGE LONDON HOSPITALS N...
RXW - SHREWSBURY AND TELFORD HOSPITAL NHS...
RXR - EAST LANCASHIRE HOSPITALS NHS TRUST
RJR - COUNTESS OF CHESTER HOSPITAL NHS FOU...
RXF - MID YORKSHIRE HOSPITALS NHS TRUST
RQ8 - MID ESSEX HOSPITAL SERVICES NHS TRUST
RRK - UNIVERSITY HOSPITALS BIRMINGHAM NHS F...
RWE - UNIVERSITY HOSPITALS OF LEICESTER NHS...
RD8 - MILTON KEYNES HOSPITAL NHS FOUNDATION...
RF4 - BARKING, HAVERING AND REDBRIDGE UNIVE...
RCX - THE QUEEN ELIZABETH HOSPITAL, KING'S LY...
RNS - NORTHAMPTON GENERAL HOSPITAL NHS TR...
RJL - NORTHERN LINCOLNSHIRE AND GOOLE HOSP...
RVJ - NORTH BRISTOL NHS TRUST
RAE - BRADFORD TEACHING HOSPITALS NHS FOUN...
RMP - TAMESIDE HOSPITAL NHS FOUNDATION TRUST
RTP - SURREY AND SUSSEX HEALTHCARE NHS TRU...
RWD - UNITED LINCOLNSHIRE HOSPITALS NHS TRU...
RJE - UNIVERSITY HOSPITAL OF NORTH STAFFORD ...
RFS - CHESTERFIELD ROYAL HOSPITAL NHS FOUN...
RM3 - SALFORD ROYAL NHS FOUNDATION TRUST
RK9 - PLYMOUTH HOSPITALS NHS TRUST
RVV - EAST KENT HOSPITALS UNIVERSITY NHS FOU...
RD1 - ROYAL UNITED HOSPITAL BATH NHS TRUST
RJZ - KING'S COLLEGE HOSPITAL NHS FOUNDATION...
RXP - COUNTY DURHAM AND DARLINGTON NHS FO ...
RA2 - ROYAL SURREY COUNTY HOSPITAL NHS FOU...
RD3 - POOLE HOSPITAL NHS FOUNDATION TRUST
Trust Name


SHMI
300
200
100
0
RJZ30 - PRINCESS ROYAL UNIVERSITY HOS...
RJZ01 - KING'S COLLEGE HOSPITAL (DENM...
0
10
20
30
40
50
60
70
80
90
100
110
Expected number of deaths


Standardised Readmission Ratio (SRR)
110
105
100
95
90
85
80
RJZ - KING'S COLLEGE HOSPITAL NHS FOUNDA...
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
Number of Expected Readmissions

Costs

- Change of practice associated with annual savings of approximately £1.5 million

Value in Practice – *major trauma case study*

Mr Toby Colegate-Stone

Trauma care in the UK

- 48,000 people experience severe injury each year
- Traumatic injury is the major cause of death for people under the age of 44
- **2007**: National Confidential Enquiry into Patient Outcome and Death (NCEPOD) report: “60% of trauma patients in England had suboptimal management in relation to quality, clinical intervention and organisation of care.”
- **2010**: National Audit Office report cited unacceptable variation in major trauma care in England, and called for action to coordinate care between institutions.
- **2010**: Trauma Network starts
- Trauma Audit and Research Network suggested that the probability of a major trauma patient surviving in NHS England was 63% better in 2014–15 than in 2008–09
- London Trauma System has improved quality and outcomes for the majority of severely injured patients. Survival rates increased by up to 50% over 5 years


time is life
King's Helipad Appeal

Trauma – logistical issues

- King's College Hospital Major Trauma Centre receives all trauma patients simple and complex polytrauma
- Complex poly trauma is unpredictable & needs urgent attention
- Timeliness of care is linked to outcomes
- Finite capacity
- Patients with lower acuity injuries still need urgent care
- They often lose out those to the more complex patients

Ambulatory trauma patients: day surgery versus in-patient care delivery

- A pragmatic response
- Provide fixed guaranteed slot for trauma patients
- Converts the trauma service:
  - From unpredictable to predictable
  - Provides extra in-patient theatre capacity for those that need it the most
  - Is a more patient-centred approach
- We assessed this from a VBHC perspective to assess Value of DSU versus in-patient surgery
- Question: Does the DSU pathway offer better Value than an in-patient one?
- Time drive activity based costing (TDABC) and basic patient outcome assessments

RESEARCH

Increasing value: The King's College Hospital Experience

Toby Colegate-Stone, Adel Tavakkolizadeh, John Moxham, Joydeep Sinha

ABSTRACT

The increasing trauma demands imposed by our population require innovative practice. A day surgery trauma service is a pragmatic response for those patients with less severe, more ambulatory trauma, and whose surgery has a lower risk profile. By using the principles set out in the value-based healthcare (VBHC) agenda, such a re-orientation of service offers opportunities in improving outcomes and reducing costs, this study assessed the impact of the day surgery trauma service in its current activity, the outcomes generated, its potential development and its fiscal footprint. The average patient satisfaction was very good with 92% preferring their surgery performed as day surgery rather than as an inpatient. Day surgery was noted to have a higher run rate of cases per unit of time, lower costs and subsequently a better margin generation per minute. The additional annual profit generated by performing a single whole day trauma list in day surgery was approximately £293000. By focusing on the needs of the patients and placing them at the centre of service re-design constructive change is seen to be possible. The day surgery trauma service can be shown to deliver higher value care. Triaging the locus of surgery in this way helps to get patients to the best place for the best outcome.

Key Words: Day surgery • Trauma • Value-based care

Toby Colegate-Stone
Consultant orthopaedic and trauma surgeon, King's College Hospital, London

Adel Tavakkolizadeh
Consultant orthopaedic and trauma surgeon, King's College Hospital, London

John Moxham
Director of clinical strategy for King's Health Partners, King's College Hospital, London

Joydeep Sinha
Consultant orthopaedic and trauma surgeon, Clinical director for orthopaedics and CAG lead, King's College Hospital, London

Email: tobycolegate-stone@nhs.net

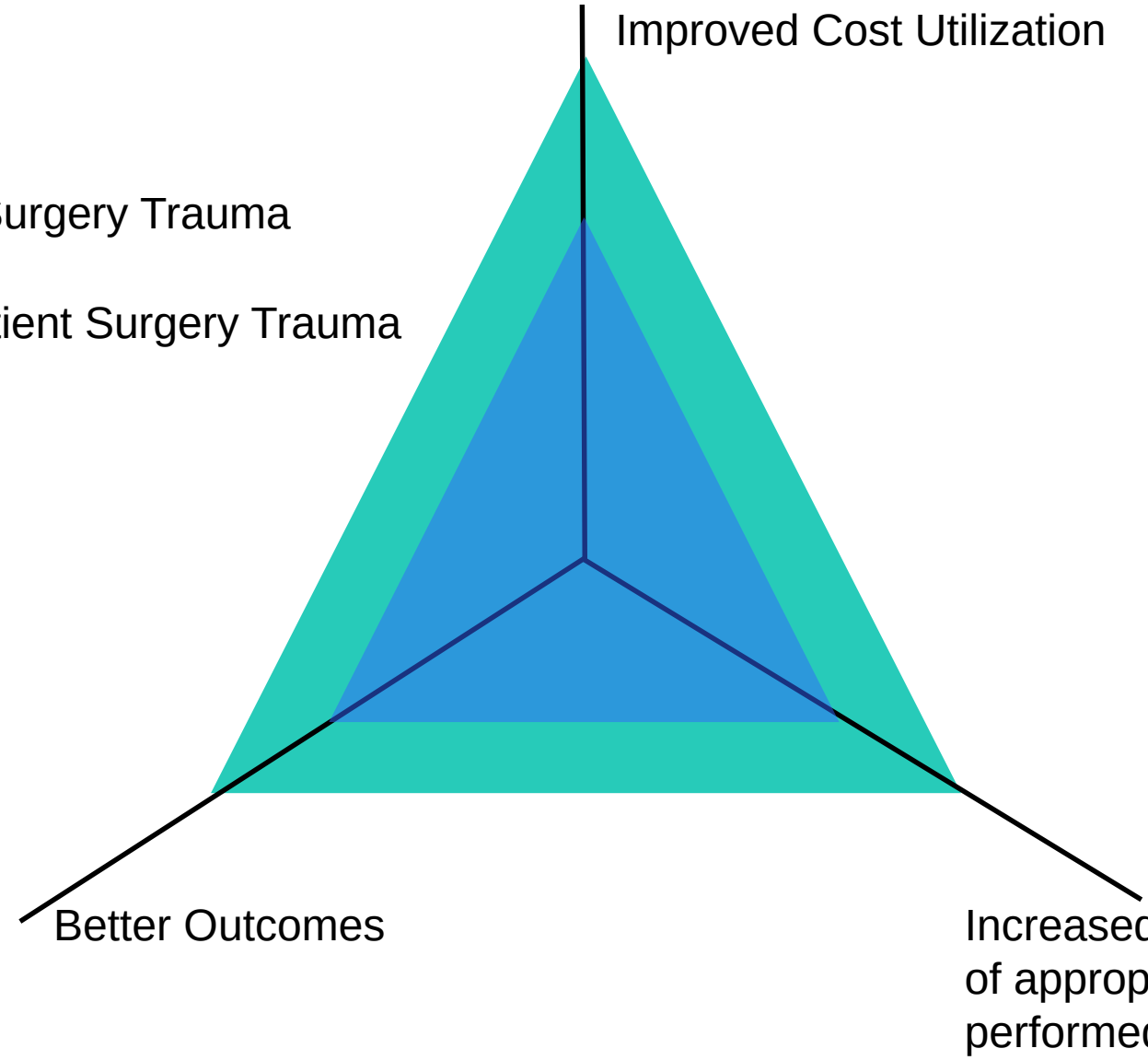
The trauma backdrop

The impact that trauma and musculoskeletal (MSK) related disorders have on society are significant and increasingly burdensome. Major trauma is the greatest cause of mortality in people under 40 (Trauma Audit and Research Network [TARN], 2015) while fractures to the proximal femur (such as neck of femur) are the second-ranking cause of 30-day mortality following emergency hospital admissions (Health and Social Care Information Centre, 2014). MSK-related conditions represent the greatest cause of sick leave and health-related loss of productivity to the economy at an estimated annual cost to the UK of £18 billion (Department for Work and Pensions, 2002). Over 30% of all disability allowance claims are related to MSK disorders. This is greater than the sum of mental health, cardiovascular disease, stroke and respiratory disease (Arthritis Research UK, 2016). The annual trauma budget alone is approximately £4 billion and rising. The demands that these disorders place on our healthcare system are increasing at every point of clinical contact, and they only have an upward trajectory. It is important that clinicians, as the

https://www.magonlinelibrary.com/doi/abs/10.12968/bjhc.2016.22.6.326

Value assessment

- **Patient outcomes**
  - 9/10 – average DSU patient satisfaction
  - 92% preferred their surgery in DSU over in-patient admission
  - No adverse clinical outcomes
- **Logistics**
  - DSU had better patient flow and case load delivery as compared to in-patient
- **Finances**
  - DSU had lower costs per patient & better margin generation per minute on TDABC analysis
  - Additional annual profit generated by performing a single whole day trauma list in DSU rather than as an in-patient approx. £293,000


Improved Cost Utilization
Day Surgery Trauma
In-Patient Surgery Trauma
Better Outcomes
Increased Quantity
of appropriately
performed procedures

Value in Practice – *elective orthopaedics work in progress*

Dr Lucinda Gabriel

Elective orthopaedics – the value challenge?

- 45-65 year olds are the most common to complain of musculoskeletal conditions
- Upward trajectory in volume of our ageing population
  - 65 year olds and over increasing from 17% to 23% by 2035
- Average age for primary knee replacement has dropped from 71 to 69 between 2004 and 2013
  - 35% of all patients undergoing joint replacement are under 65 years old
- Joint replacement surgery alone costs the NHS approximately £1 billion per year
- Ticking time bomb of revision surgery
- Specialist centres have lower revision rates
  - Whittington by 50% and lower mortality than peers
  - If infection rates were at the levels seen in specialist centres the NHS would be able to save approximately £300 million per year
  - At current costing this equates to funding for an extra 55,000 joint replacements

Elective orthopaedics – Darzi Fellowship in VBHC

- Aim: develop a value calculator
- Applying lessons:
  - Define a cohort/s
  - Outline pathway
  - Outcome measures
  - Costing models
- Identifying challenges, now and in the future…

Value for the elective orthopaedics pathway?

$$\text{Value} = \frac{\text{Outcomes that matter to patients, service users and carers}}{\text{Costs of achieving those outcomes Over the complete pathway of care}}$$

Elective orthopaedics pathway – outcome measures?

$$\text{Value} = \frac{\text{Outcomes that matter to patients, service users and carers}}{\text{Costs of achieving those outcomes Over the complete pathway of care}}$$

Tier 1. Health status achieved/retained

- Mortality rate
- HRQOL (0/12, 6/12, 12/12, 36/12)

Tier 2. Process of recovery

- Return to regular activity
- Return to work
- Treatment delays
- LOS
- PE/DVT/MI/Redo/Delirium

Tier 3. Sustainability of health

- Revision/replacement
- Susceptibility to infection
- Ongoing pain
- Risk of fracture

Elective orthopaedics pathway – outcome measures?

1. Mortality/morbidity
2. LOS/discharge info
3. EPR
4. Clerical admin data
5. Complications SAI reporting
6. Complaints reporting
7. Surgical events - revision
8. PROMS (EQ5D/VAS, OHS)
9. Pt engagement/experience

$$\text{Value} = \frac{\text{Outcomes that matter to patients, service users and carers}}{\text{Costs of achieving those outcomes Over the complete pathway of care}}$$

Tier 1. Health status achieved/retained

Mortality rate
HRQOL (0/12, 6/12, 12/12, 36/12)

Tier 2. Process of recovery

Return to regular activity
Return to work
Treatment delays
LOS
PE/DVT/MI/Redo/Delirium

Tier 3. Sustainability of health

Revision/replacement
Susceptibility to infection
Ongoing pain
Risk of fracture

Elective orthopaedics pathway – cost measures?

$$\text{Value} = \frac{\text{Outcomes that matter to patients, service users and carers}}{\text{Costs of achieving those outcomes Over the complete pathway of care}}$$

Costs

1. Primary care/referral
2. Inpatient care
3. Imaging
4. Allied health
5. Medications
6. Post op follow up
7. Outpatient physio

Elective orthopaedics pathway – cost measures?

1. PLICS
2. EPR
3. PIMS
4. ICD-10 codes
5. HRG

$$\text{Value} = \frac{\text{Outcomes that matter to patients, service users and carers}}{\text{Costs of achieving those outcomes Over the complete pathway of care}}$$

Costs

1. Primary care/referral
2. Inpatient care
3. Imaging
4. Allied health
5. Medications
6. Post op follow up
7. Outpatient physio

Elective orthopaedics pathway – Define cohort

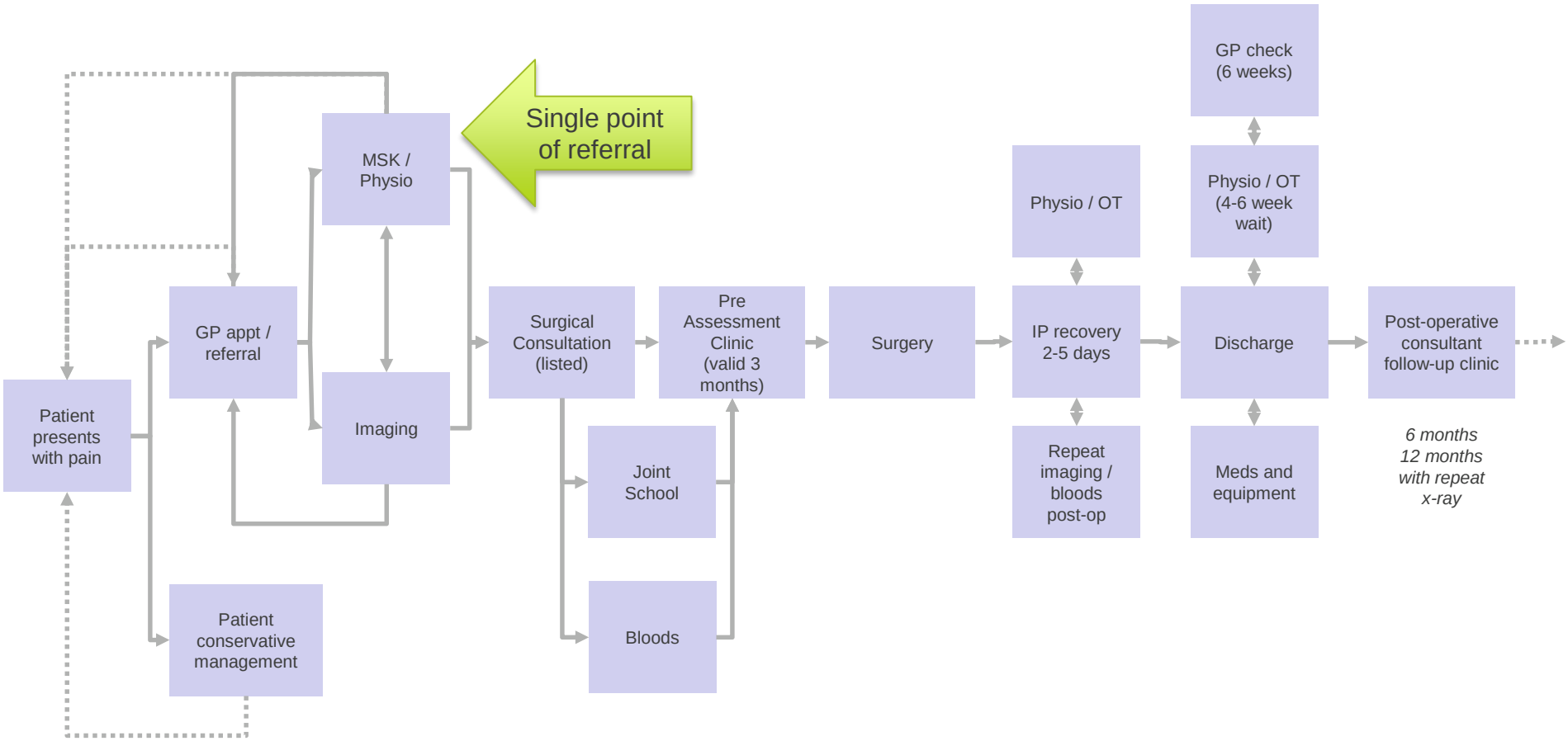
Inclusion criteria:

- THR for primary hip OA
- Routine surgery KCH Consultant
- ASA 1-3
- Grouped by clinic referral (QMS/DH)

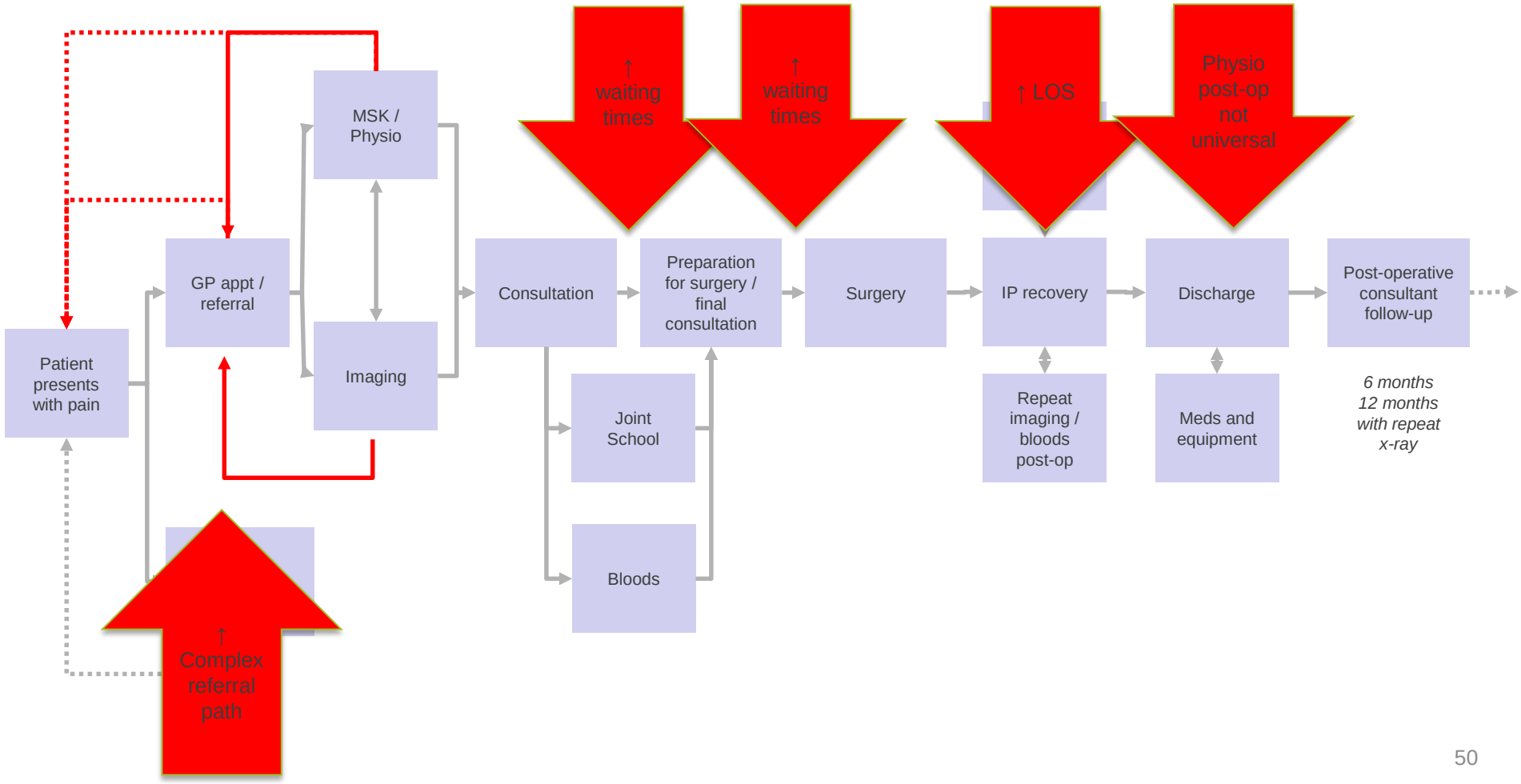
Exclusion criteria:

- Paediatric history
- Hip dysplasia
- Trauma history
- Trauma as surgical indication
- Presence of infection
- Intra-op periprosthetic fracture
- Complex medical/surgical patient
- Revision surgery

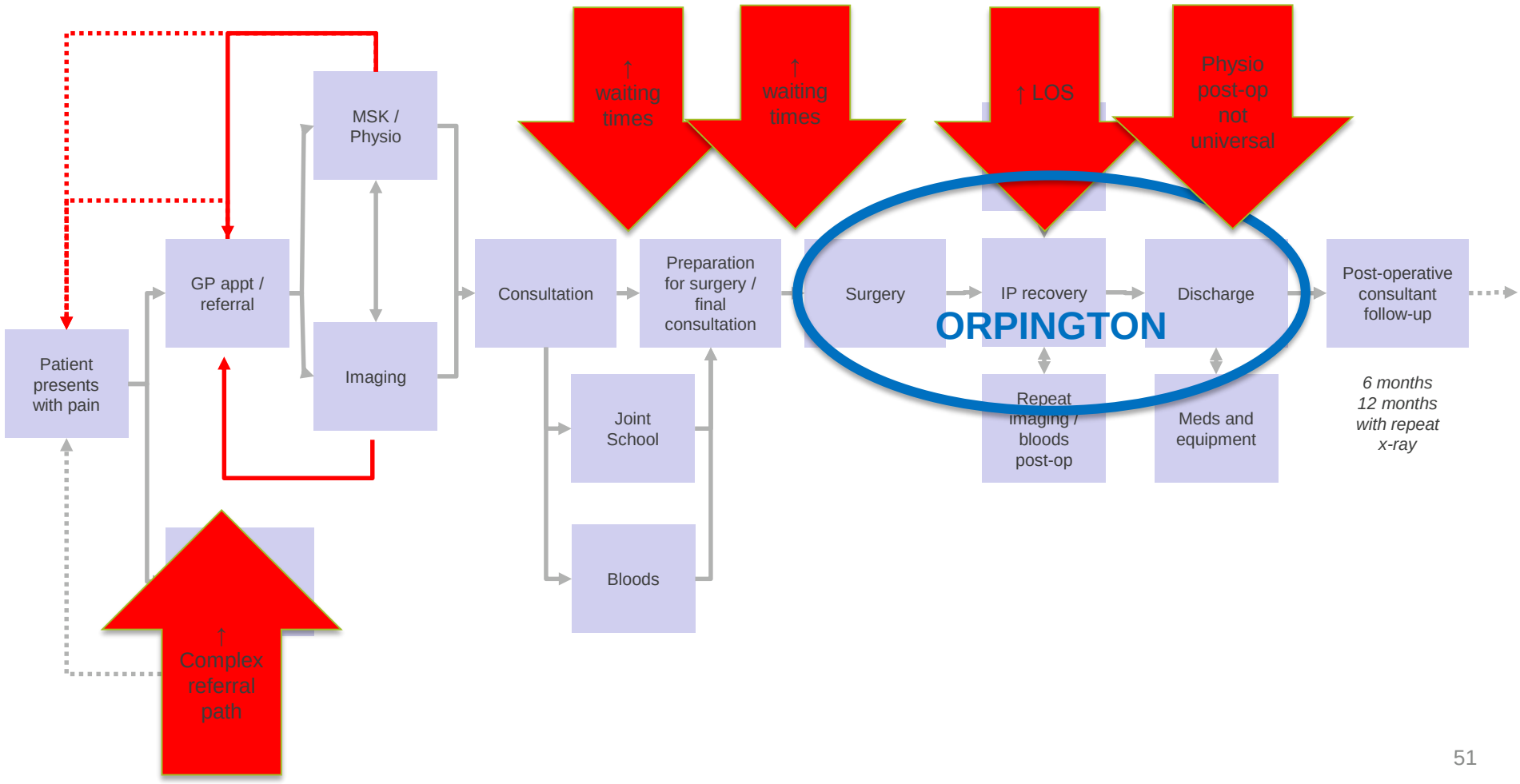
Elective orthopaedics pathway – Queen Mary Sidcup



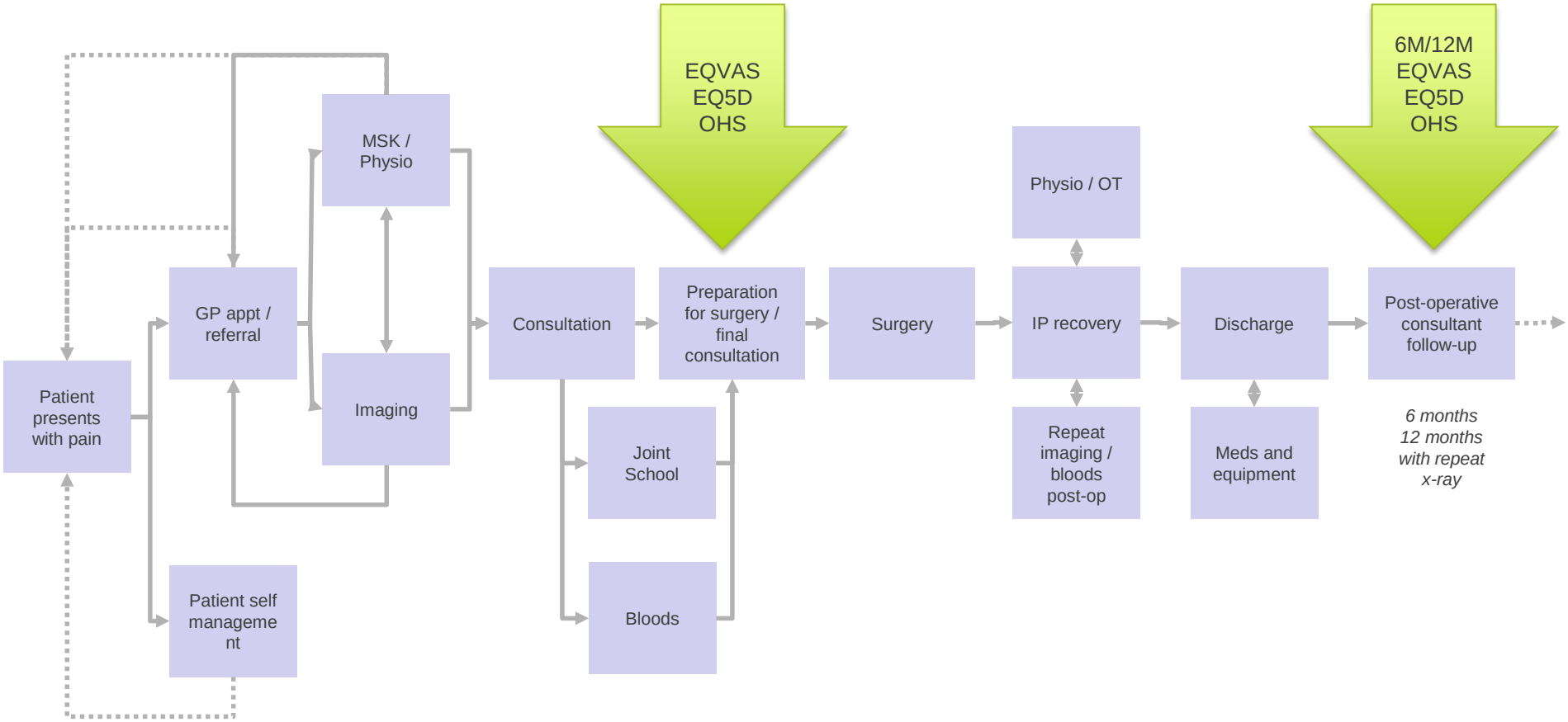
Elective orthopaedics pathway – Denmark Hill



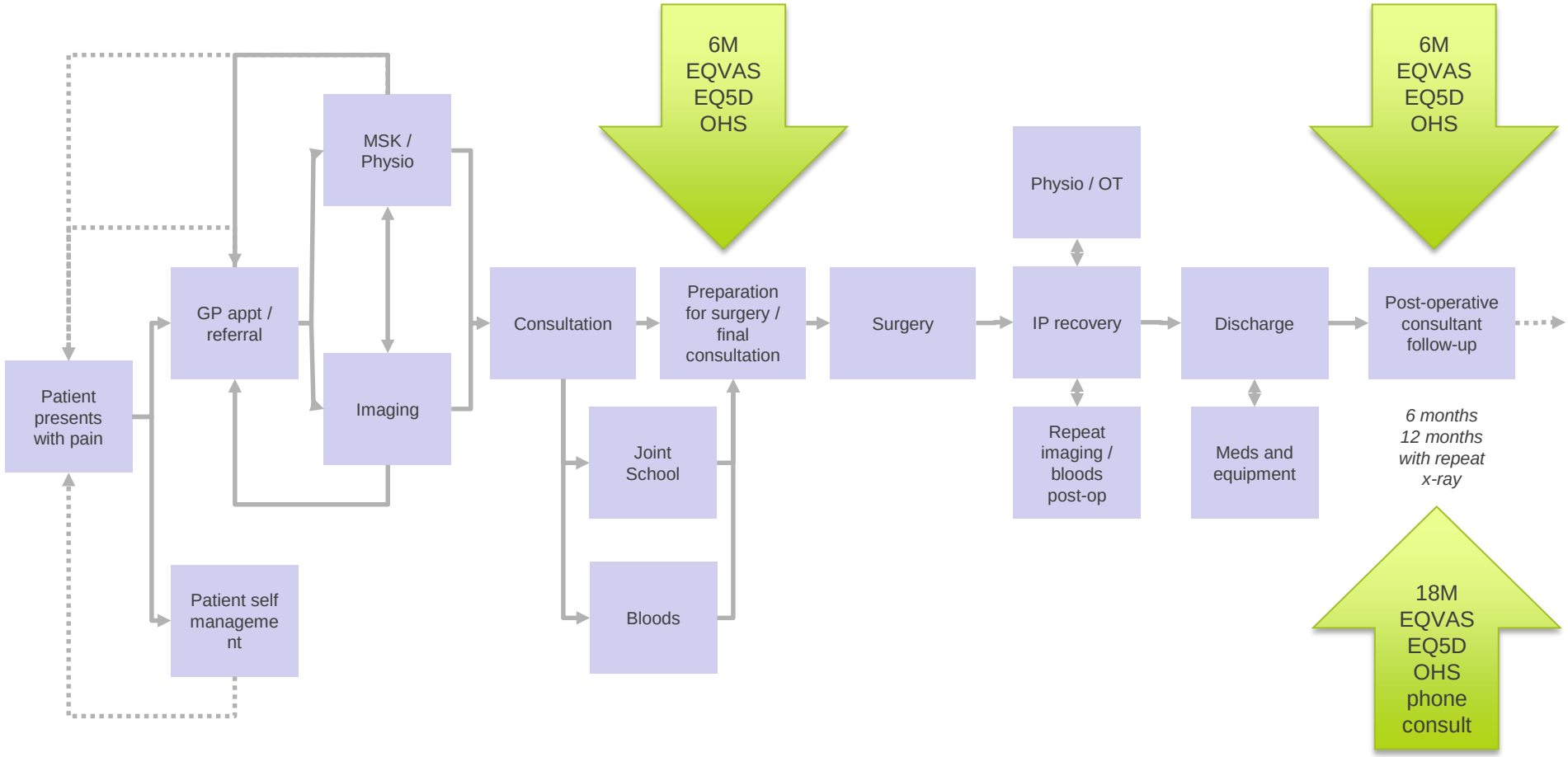
Elective orthopaedics pathway – Denmark Hill



Elective orthopaedics pathway – Outcome Measures



Elective orthopaedics pathway – Outcome Measures



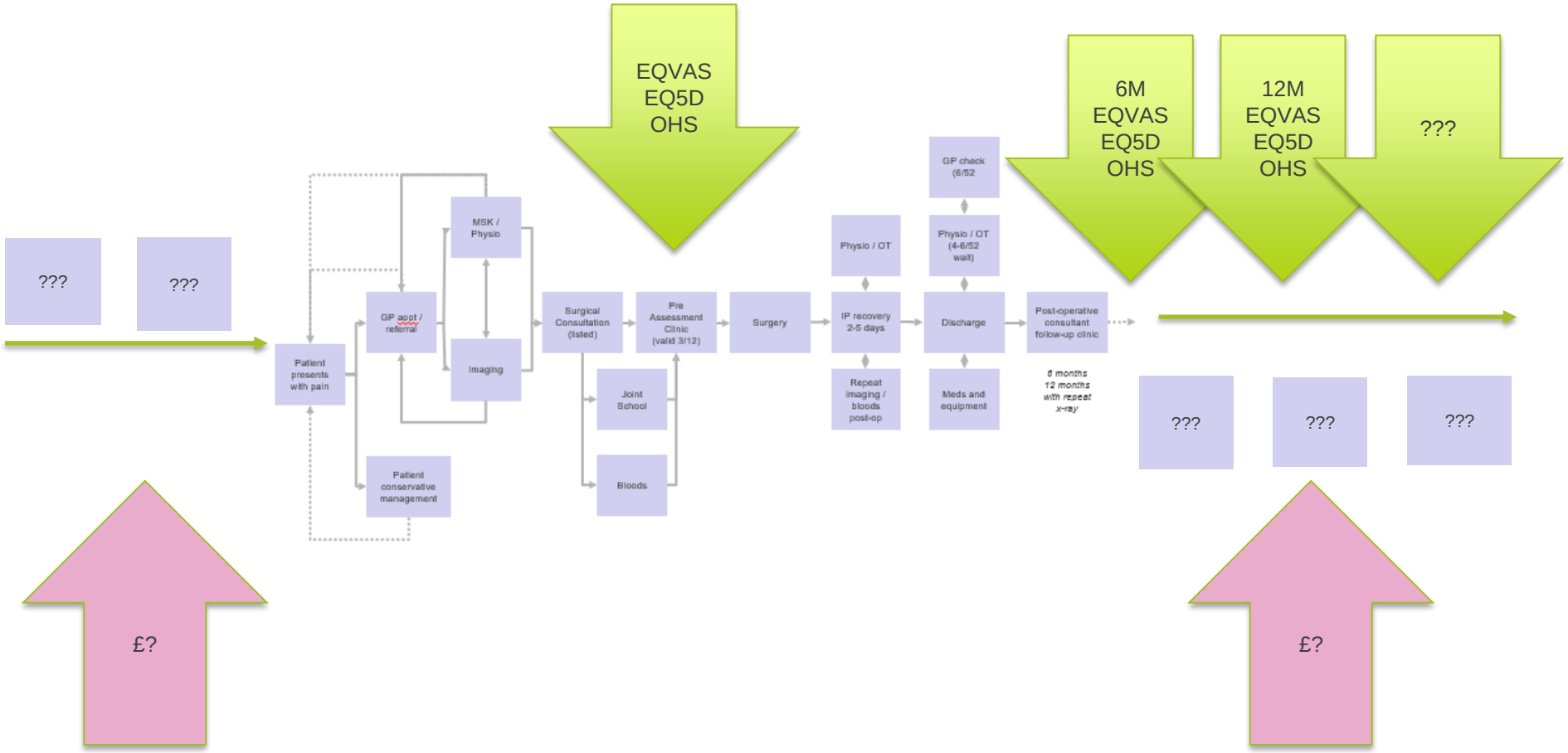
Elective orthopaedics pathway – Obstacles

- Ethics
  - Service delivery improvement program vs research program/audit
- IT
  - KHP Passport
  - Local care record
  - PROMS data
- Data
  - Incomplete
  - Incompatible (NHS no vs Hospital no)

Elective orthopaedics pathway – Obstacles

- Collaboration between silos
  - Inter-departmental
    - Clinical (Orthopaedics, physiotherapy)
  - Intra-organisational
    - Within FT (DH/QMS/Orpington)
  - Inter-organisational
    - Between FT (Kings vs GSTT)
    - KHP & HIN
    - KHP & CCG & local authorities
    - KHP & primary care
- Health: interdependent conditions that occur along a continuum
  - Define ‘complete’ patient pathway

Elective orthopaedics pathway – Complete pathway



Questions

Discussion

Overcoming the challenges of *value in practice*

How *important* are the following to delivering value in practice?

And how *challenging* are the barriers to implementation?

1. Measuring and sharing outcomes that matter to patients, carers and staff?
2. Defining whole pathways of care across health and care – where to start / stop?
3. Accurate and meaningful cost information for whole pathways of care?
4. Collecting and sharing patients' and clinicians' data - information governance and ethics?
5. Data linkage and systems interoperability?
6. Commissioning and payment perverse incentives?
7. Having time and energy need to develop a value culture?

For more information:
Kings Health Partners
Ground Floor, Counting House
Guy's Hospital
London SE1 9RT

0207 188 2892

kingshealthpartners@kcl.ac.uk

www.kingshealthpartners.org

@kingshealth @joseph_w_casey