

Clinical pharmacy

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Guy's and St Thomas' **NHS**
NHS Foundation Trust

Disclosures

I have no disclosures relevant to this presentation.

Plan

Guy's and St Thomas' NHS Foundation Trust

Medicines are dangerous

Medicines on the National Agenda (UK)

What is clinical pharmacy

Clinical pharmacy activity

Clinical pharmacy outcomes

Developing clinical pharmacists

Adherence to medicines

Guy's and St Thomas' NHS Foundation Trust

1200 bed city centre secondary and tertiary care teaching and Academic Health Science Centre across 3 sites

Over 100 000 inpatients, 600 000 outpatient attendances, 160 000 ER attendances, 7500 babies per year

Over 12 000 staff, 1200 doctors, 6000 nurses

Turnover over £1bn

Pharmacy: 330 staff, 126 pharmacists, 14 pre – registration students, 21 residents, exposure to practice to over 350 undergrads per year

Staff budget £12m, drugs budget £80m+



Kings Health Partners: world-class research, teaching and clinical practice brought together for the benefit of patients

is one of only five UK accredited Academic Health Sciences Centres;

has one of the world's leading research-led universities, ranked in the top 20 universities in the world;

provides education and research in the widest range of subjects allied to medicine of any London institution;

brings together three of London's most successful NHS Foundation Trusts;

has a local population which is among the most ethnically, socially and economically diverse in the world.

has the largest critical care service in the UK, is home to Europe's largest liver transplant centre and UK's largest live kidney donor programme;

provides 24/7 specialist services for victims of stroke and cardiac arrest

has the busiest A&E departments in the UK and is home to a major trauma centre;

has the largest dental school in Europe;

is a major centre for cancer and renal services, with the a leading centre for genetics, stem cell and allergy research

serves over 1.5 million patients every year, has approximately 25,000 employees

Medicines

Medicines are the most frequent intervention made in health care

886 million items costing £8,529m (15% of NHS costs)

Doubled in the last 10 years

40 items per year if over 60

Drug cost inflating at 6.7% per year

Kings Fund 2009

Medicines are dangerous

All : 15 per 100 admissions

Serious: 6.7 per 100 admissions (CI 5.2-8.2)

Fatal: 0.32 per 100 admissions (CI 0.23-0.41)

Lazarou, JAMA, 1998

Potential: 5.5 per 100 admissions

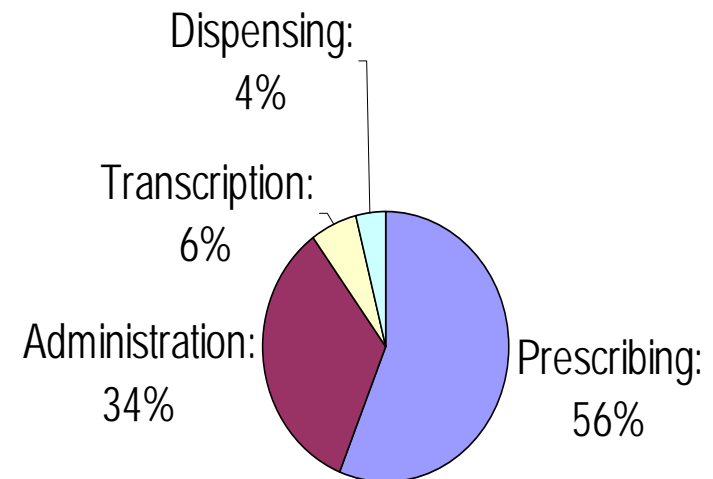
Bates et al, JAMA, 1995

> 2 000 000 patients suffer ADE

approx 106 000 patients died from ADE

5th - 7th LARGEST CAUSE OF DEATH IN US

Causes of Errors



Medicines are dangerous

Prescribing error:

7% (2-14%) of medication orders,

52 (8-227) errors per 100 admissions,

24 (6-212) errors per 1000 patient days.

Lack of standardisation between severity scales prevented any comparison of error severity across studies.

Lewis et al, [Drug Saf.](#) 2009;32(5):379-89.

EQUIP study 2009

Prospective data collection

19 acute hospital trusts in North-west England

124,260 medication orders checked on seven 'census days'

11,077 errors were detected

A mean error rate of 8.9 errors per 100 medication orders.

The majority of errors were deemed potentially significant (53%) or potentially minor (40%).

Potentially serious errors were less common (5%) and potentially lethal errors were found in fewer than 2% of erroneous medication orders.

EQUIP study. <http://www.gmc-uk.org/news/5156.asp>

Pharmaceutical misadventure (GSTT)

n=952

Actual Harm: 214 (22%)

Near miss: 730 (78%)

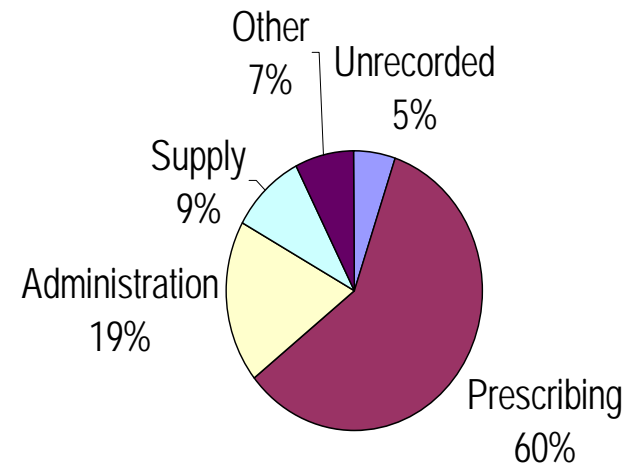
282 different drugs involved

Anticoagulants 136 (14%)

Antibiotics 134 (14%)

Opioids 83 (9%)

Where in the drug use process error occurred (n=953)



Medicines on the national agenda



Guidance about compliance

Essential standards of quality and safety



What providers should do to comply with the section 20 regulations of the Health and Social Care Act 2008
March 2010

NHS
Commissioning Board

Commissioning for quality and innovation (CQUIN):
2013/14 guidance

Draft – December 2012



Monitor

Compliance Framework 2013/14

28 March 2013

Monitor's role is to protect and promote patients' interests. This guidance describes our approach to ensuring NHS foundation trusts are well led, from both a quality, service delivery and financial perspective.

EQIPP
Delivering quality efficiently

a comprehensive online resource to help you identify opportunities and support quality improvement in NHS services

NHS

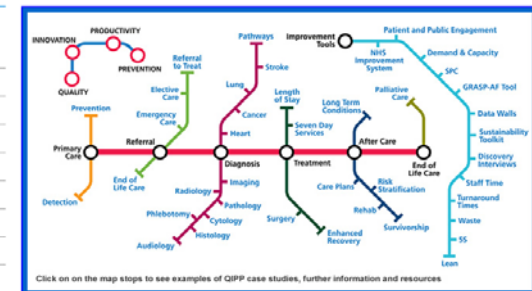
NHS Improvement

Search:

Home | EQIPP Home | Cancer | Diagnostics | Heart | Lung | Stroke | NHS Improvement System

EQIPP - Resources

- Where to Start
- Pathways
- Workstreams
- Evidence Template
- Need Some Help?
- Publications
- Case Studies
- Useful Links



QUALITY 100% QUALITY

INNOVATION INNOVATION

PRODUCTIVITY PRODUCTIVITY

PREVENTION PREVENTION

Quality standards – Hospital Pharmacy



DOMAIN 1

PATIENT EXPERIENCE

- STANDARD 1: Patient centred
- STANDARD 2: Episode of care
- STANDARD 3: Integrated transfer of care

DOMAIN 2

SAFE & EFFECTIVE USE OF MEDICINES

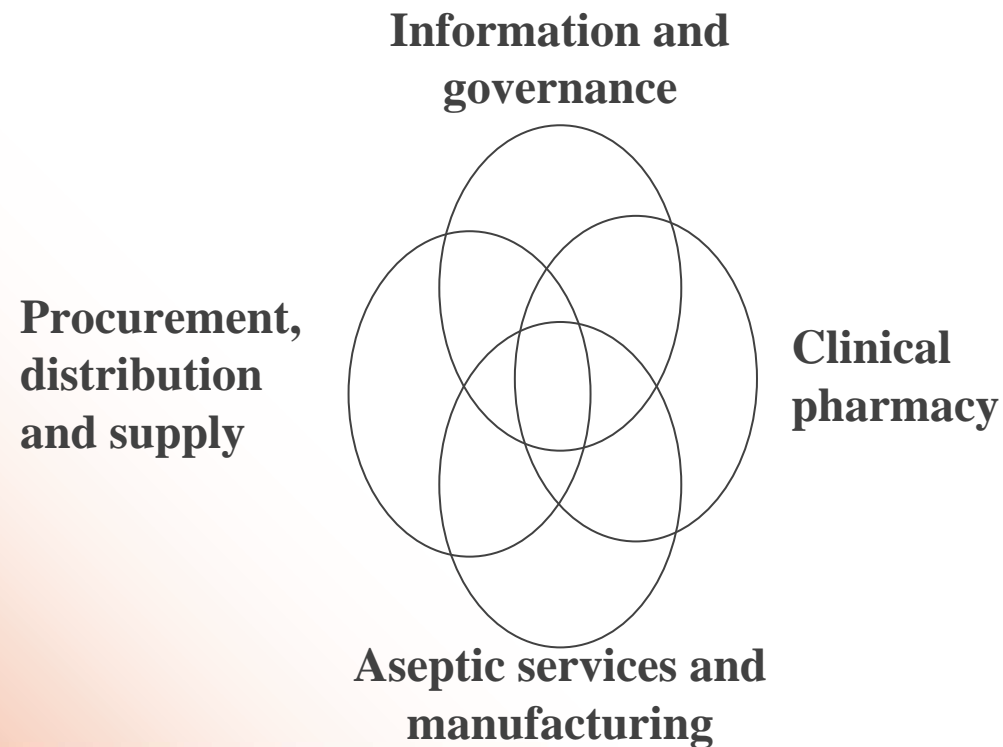
- STANDARD 4: Effective use of medicines
- STANDARD 5: Medicines expertise
- STANDARD 6: Safe use of medicines
- STANDARD 7: Supply of medicines

DOMAIN 3

DELIVERING THE SERVICE

- STANDARD 8: Leadership
- STANDARD 9: Governance and financial management
- STANDARD 10: Workforce

Effective use of medicines



"Medicines optimisation is a vital agenda, not an agenda added on to something else we are trying to do, this is absolutely central to it."

Sir David Nicholson, Chief Executive, NHS

What is Clinical Pharmacy?

Our goal is to ensure each patients' medicines are optimised for their individual needs

We will do this by ensuring...

Outcomes

Patients' medicines are accurately transcribed on admission and discharge

Patients' medicines are safe and effective

Patients receive the correct medicine in a timely manner

Patients are satisfied with information about medicines

We communicate effectively with members of the multi-disciplinary team

We learn from errors and complaints

What we will do this by undertaking the following tasks.....

Tasks

Medicines Reconciliation on admission or transfer

Clinical Review of high risk patients

Supply medicines accurately and in a timely manner

Record errors In medicines use and put systems in place to prevent recurrence

Work effectively together and with other members of the MDT

Provide information and advice about medicines to patients

Discharge patients safely

Collect data to demonstrate the impact of medicine on patient care

While at all times abiding by the following operating principles

Principles

Making the patient the focus of everything we do

Supporting our staff to deliver the best care they can

Ensuring best value in medication use

Follow and where pragmatic exceed national expectations for medicines use

What do we do

Consult with inpatients and out patients (pharmacy and in clinics)

Medicine reconciliation – 1000 per week (43% require pharmacy input)

Clinical screening – 2500 per week (48% require clinical input)

Antimicrobial stewardship – 350 per weeks

Pt education (90+ % of admissions, 50% of inpatients)

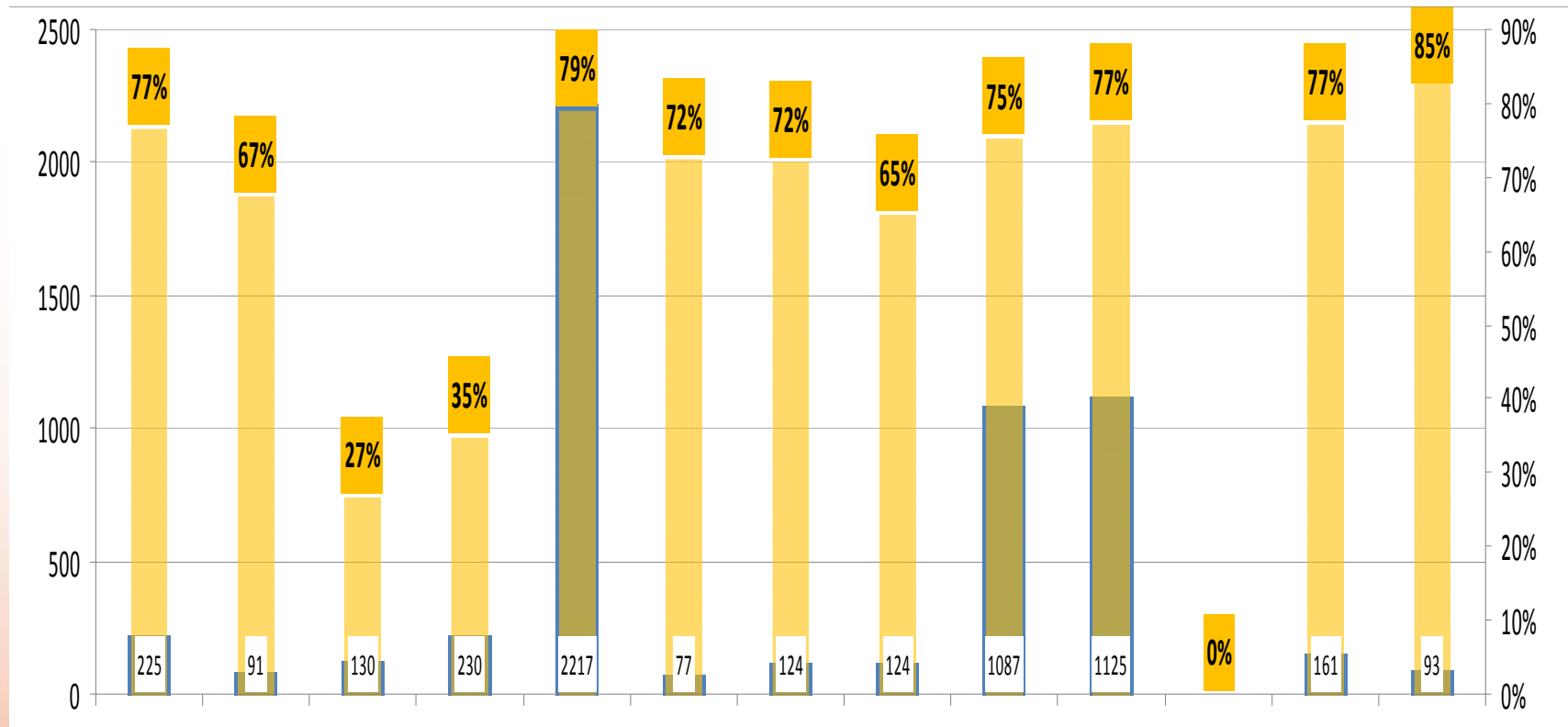
Staff information/education (500+ contacts per week)

Discharge pts (6000 safety critical interventions per month)

100+ interventions per WTE per week

No difference in numbers between eRx and paper

Medicine reconciliations – teaching hospitals

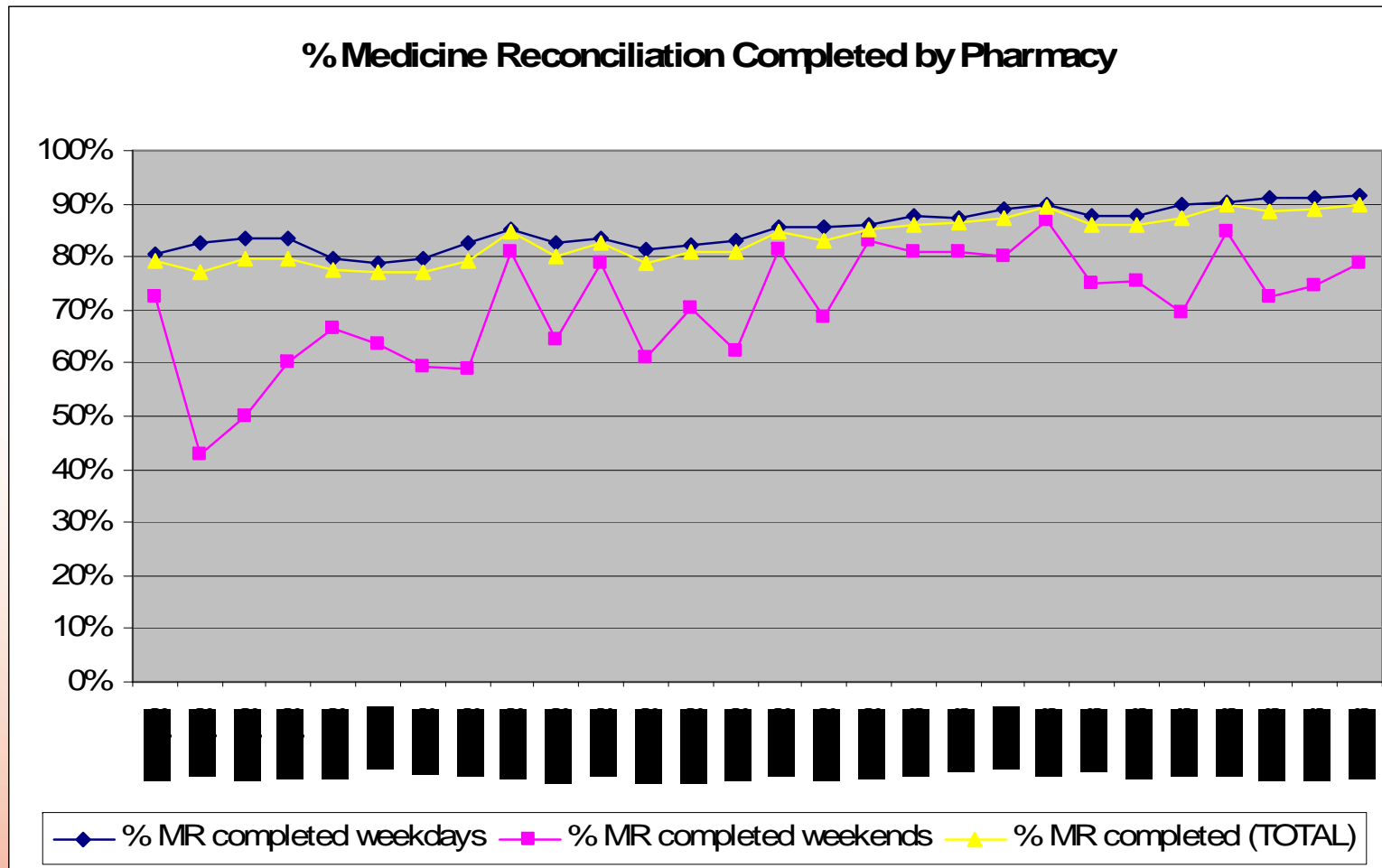


Acknowledgement: Craig Robb

Pharmacy Procurement Project Manager, Regional Pharmacy Procurement Service

Hampshire & IOW □ Oxfordshire □ Berkshire □ Buckinghamshire

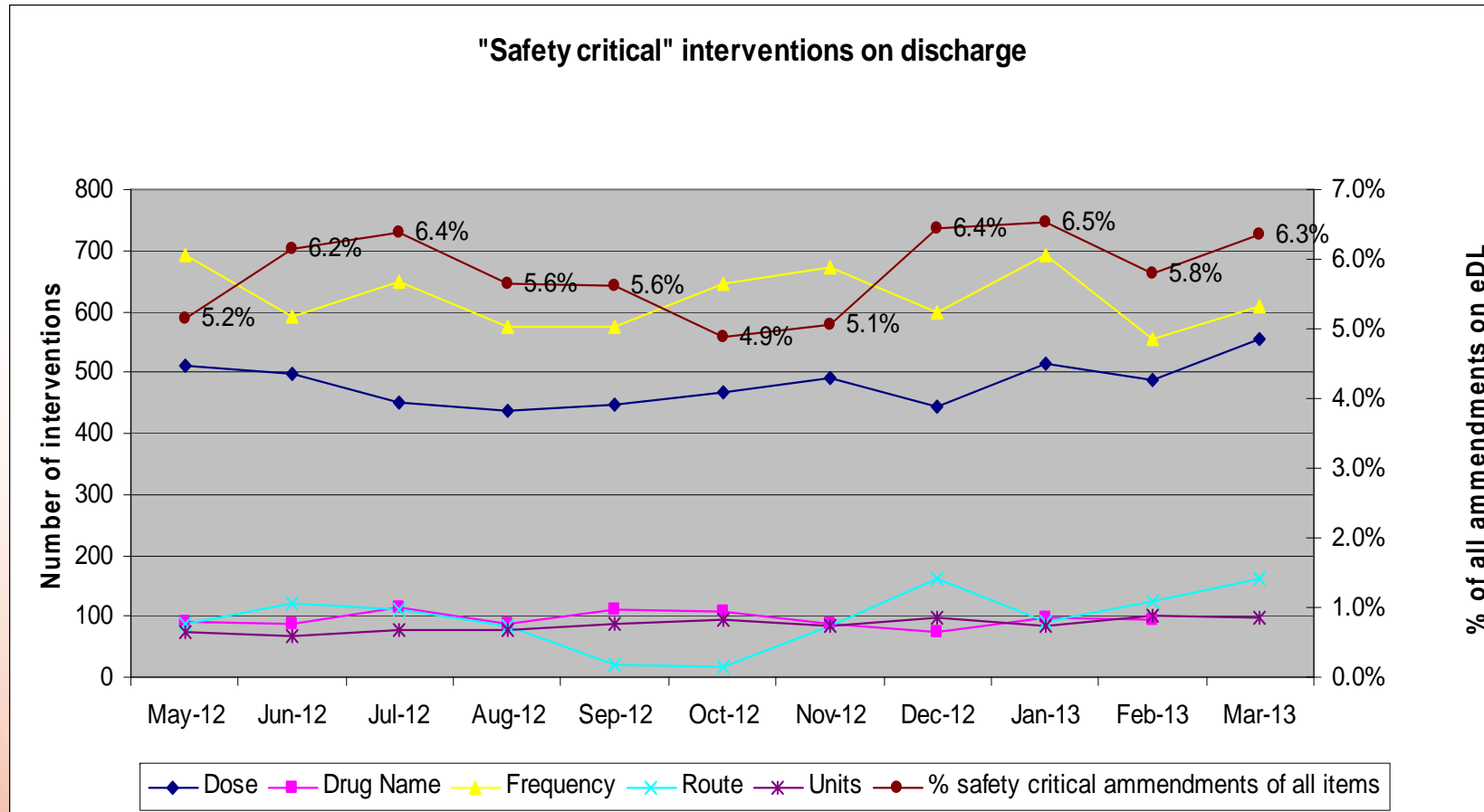
Medicine reconciliation – GSTT



Pharmacy Intervention

Reason for intervention	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)
Efficacy	1,137 (42)	1,610 (44)	1,316 (40)	1,177 (40)
Safety: to prevent ADR	1,030 (38)	1,218 (33)	1,318 (40)	1,108 (38)
Compliance/ concordance	198 (7)	283 (8)	179 (5)	229 (8)
Reduce length of stay	136 (5)	275 (8)	236 (7)	140 (5)
Cost effectiveness	97 (4)	164 (4)	117 (4)	138 (5)
Safety: in reaction to ADR	95 (4)	95 (3)	139 (4)	159 (5)
Total	2,693	3,645	3,305	2,951
FCE bed days	6,614	6,652	6,688	6,651*

Interventions



Value of interventions

Economic analysis to support PSG001 Technical patient safety solutions for medicines reconciliation on admission of adults to hospital.

Predominantly based on US data.

Errors requiring extra laboratory tests or treatment without an increased LoS (\$95 to \$227)

Errors prolonging length of stay (\$2,596)

Errors resulting in near-death experience (\$2,640).

JCAHO reported cost estimates of \$2,000 for an ADE (excluding malpractice)

Cost parameters for preventable ADEs

Cost parameter	Range
Detected medication errors	£0 - £6
Significant (non-increased LoS) pADEs	£65 - £150
Serious pADEs	£713 - £1,484
Severe, life threatening, or fatal pADEs	£1,085 - £2,120

A systematic review of the effectiveness and costeffectiveness of interventions aimed at preventing medication error (medicines reconciliation) at hospital admission. The University of Sheffield, School of Health and Related Research (SchARR)

<http://www.nice.nhs.nicemedia/pdf/PatientSafetyMedsSystematicReview.pdf>

Economic analysis

Significance	EQUIP	Sheffield	GSTT	Value
	(Incidence)	(Value £)	(Number)	(£)
Potentially lethal	2%	1,085	53	57,505.00
		2,120	53	112,360.00
Potentially serious	5%	713	135	96,255.00
		1,484	135	200,340.00
Potentially significant	53%	65	1427	92,755.00
		150	1427	214,050.00
Minor	40%	0	1077	0.00
		6	1077	6,462.00
			2780	
			Lower value	246,515.00
			Upper value	533,212.00

The cost of delivering ward based pharmacy service was calculated at £22,290 per week.

Using this model the value of contributions ranged from £246k - £533k per week.

EQUIP study. <http://www.gmc-uk.org/news/5156.asp>

NICE/NPSA. <http://www.nice.nhs.nicemedia/pdf/PatientSafetyMedsSystematicReview.pdf>

Economic analysis (sensitivity)

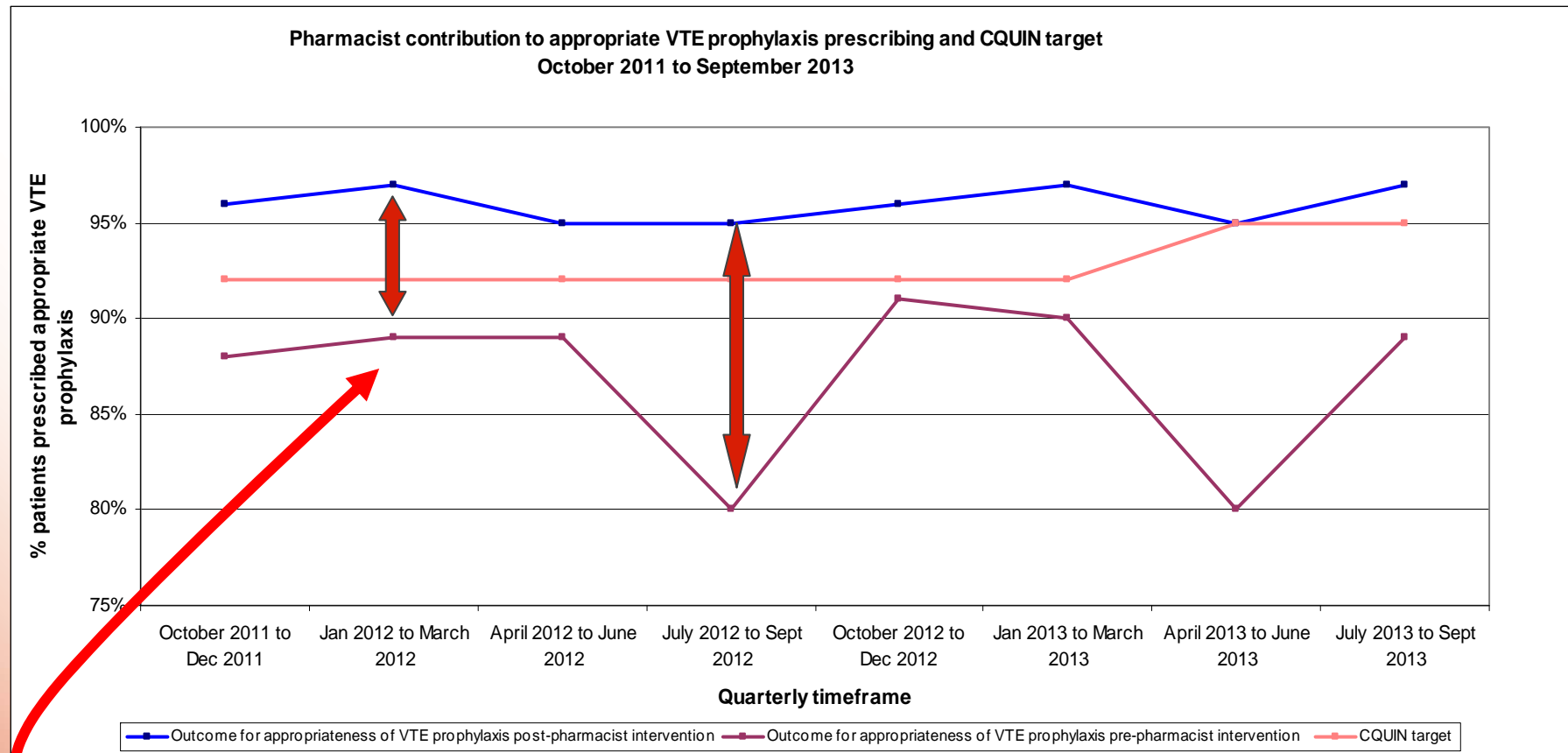
Significance	EQUIP (Incidence)	Sheffield (Value £)	GSTT (Number)	Value (£)	GSTT (50% number)	Value (£)	GSTT (10% number)	Value (£)
Potentially lethal	2%	1,085	53	57,505.00	1%	30,163.00	0.2%	6,032.60
		2,120	53	112,360.00		58,936.00	0.2%	11,787.20
Potentially serious	5%	713	135	96,255.00	3%	49,553.50	0.5%	9,910.70
		1,484	135	200,340.00		103,138.00	0.5%	20,627.60
Potentially significant	53%	65	1427	92,755.00	27%	47,885.50	5.3%	9,577.10
		150	1427	214,050.00		110,505.00	5.3%	22,101.00
Minor	40%	0	1077	0.00	60%	0.00	94.0%	0.00
		6	1077	6,462.00		10,008.00	94.0%	15,679.20
			2780					
			Lower value	246,515.00		127,602.00		25,520.40
			Upper value	533,212.00		282,587.00		70,195.00

Local data suggests only 50% of interventions are “safety critical” with the rest improving clarity, communication or adherence.

If the effectiveness of interventions at GSTT was only 10% of that calculated in EQUIP the pharmacy service would still be, at worst, cost neutral and prevent 5 potentially lethal and 13 potentially serious events per week.

Outcomes of pharmacy interventions

Appropriate prescribing of thromboprophylaxis



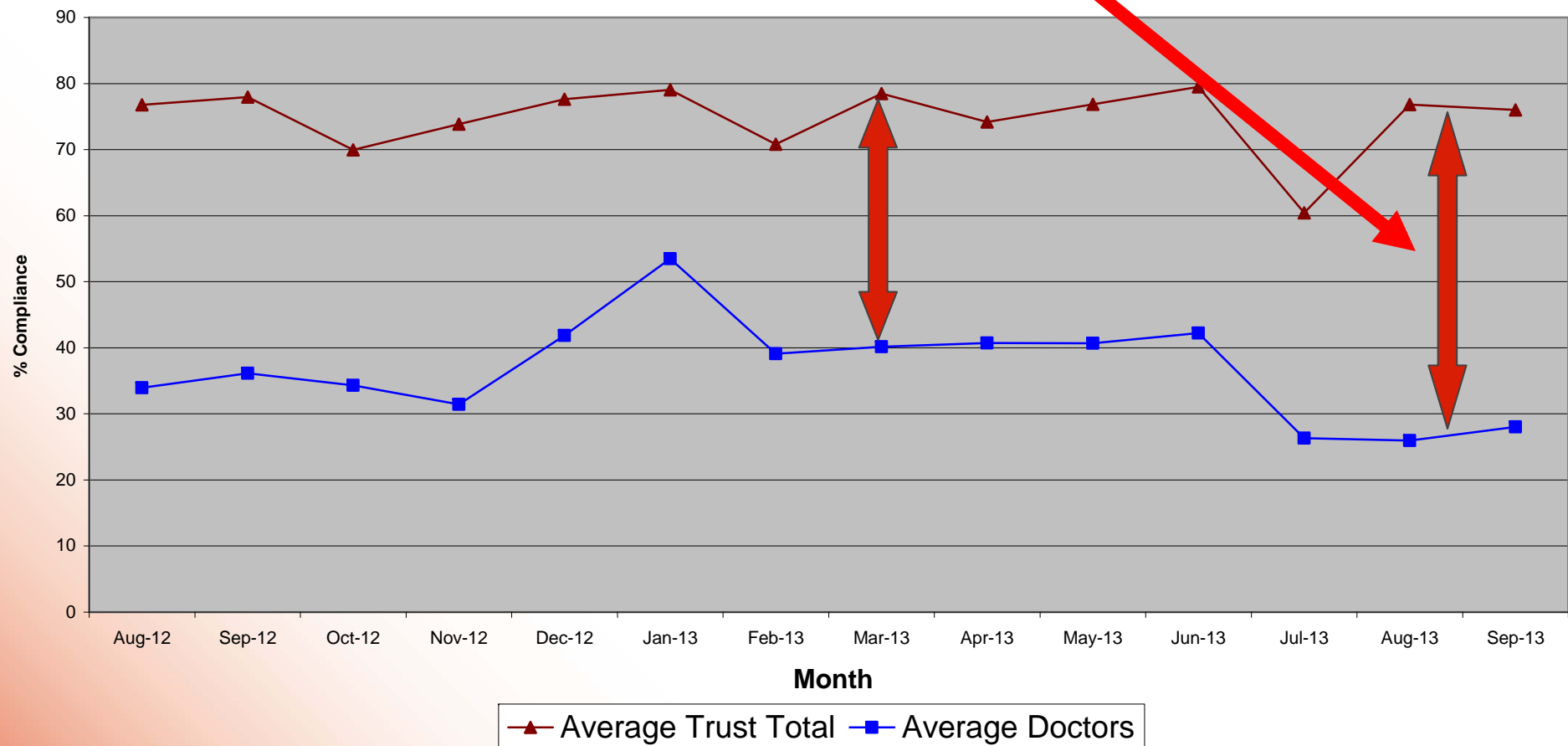
Pharmacists making the difference

Acknowledgement:
Becky Chanda, Senior Anticoagulation Pharmacist, GSTT

Outcomes of pharmacy interventions

Antimicrobial stewardship

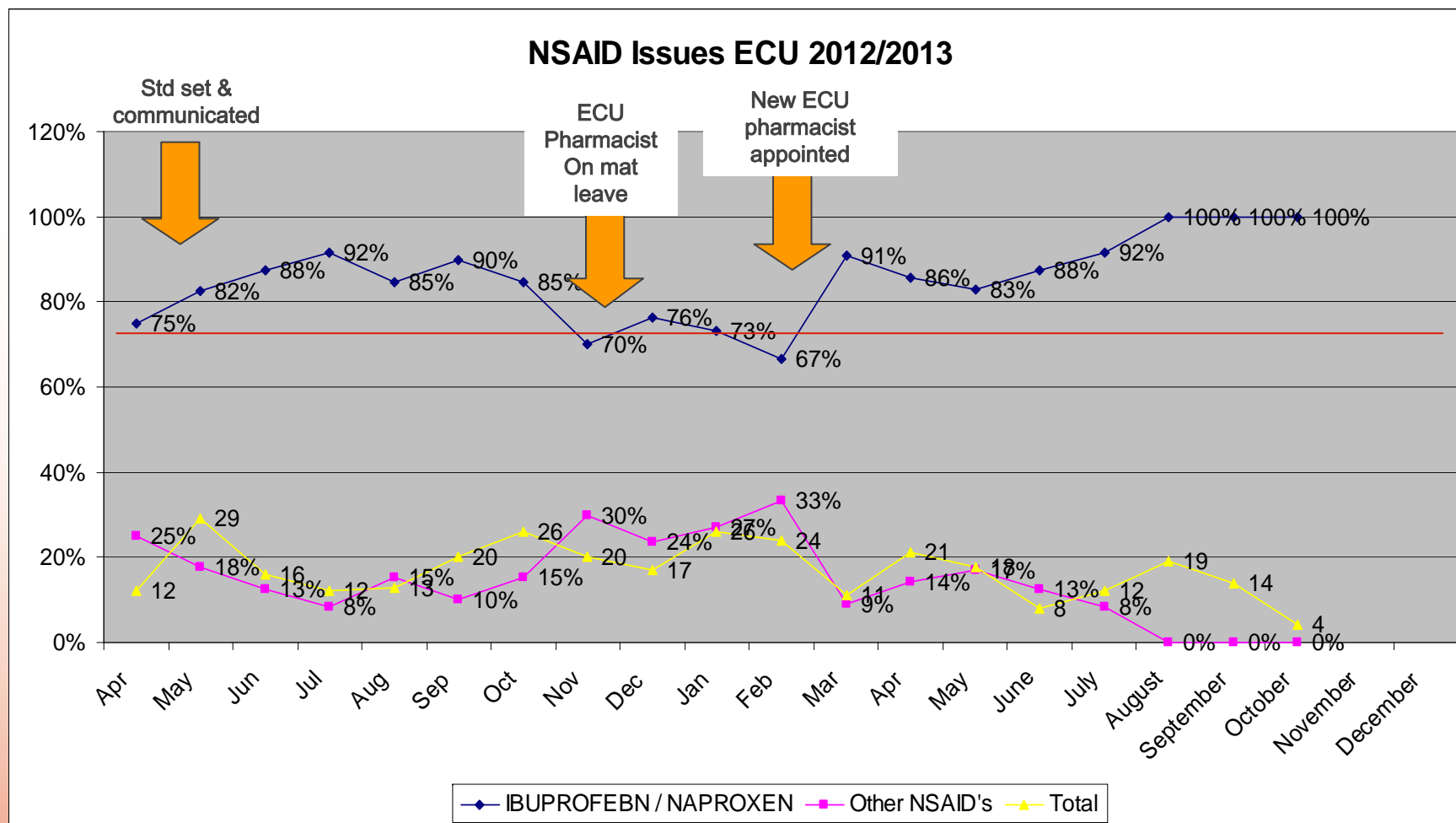
Pharmacists making the difference



Acknowledgement:
Paul Wade, Consultant Pharmacist, ID, GSTT

Outcomes of pharmacy interventions

Safe NSAID prescribing

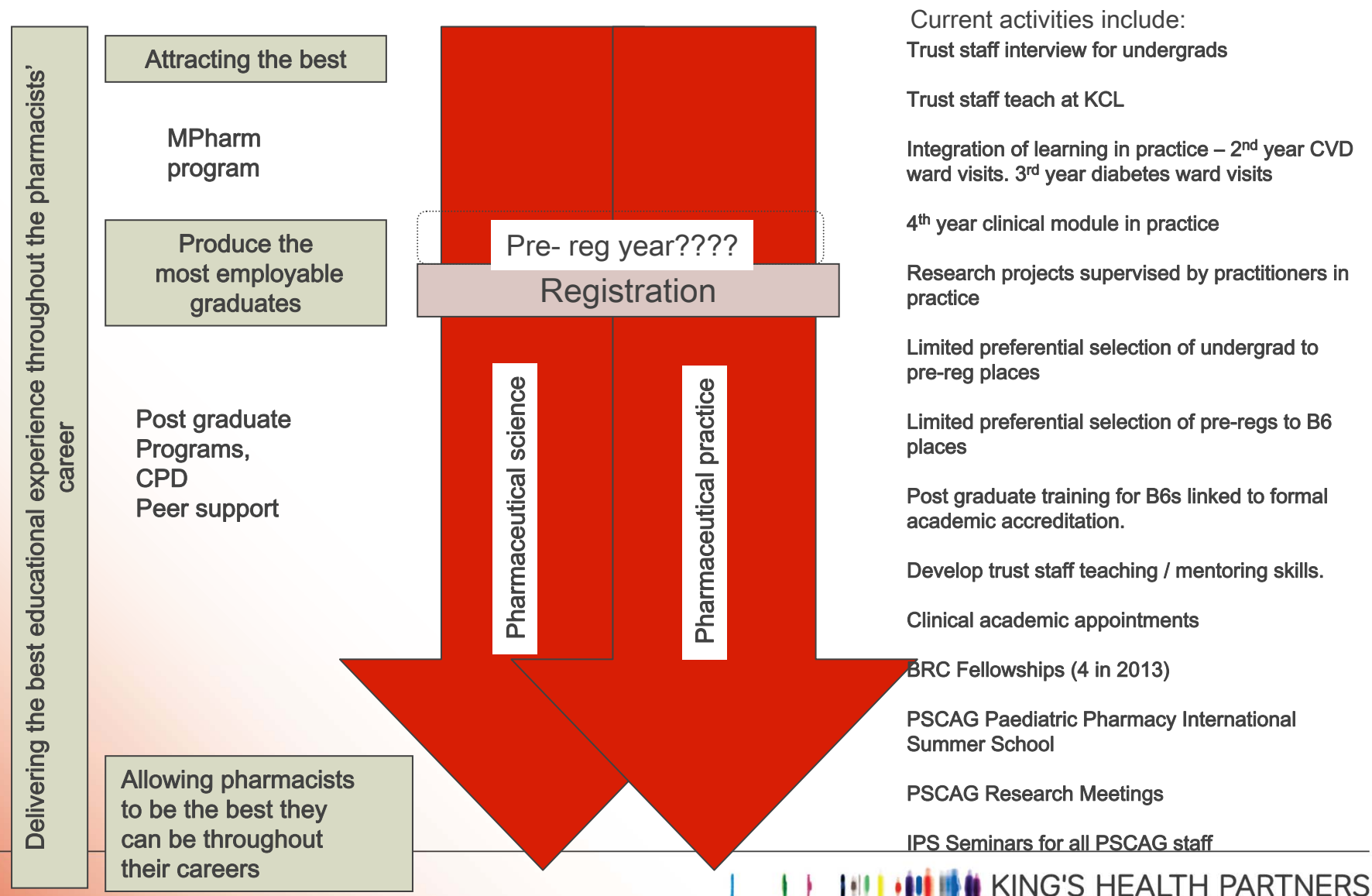


Acknowledgement:

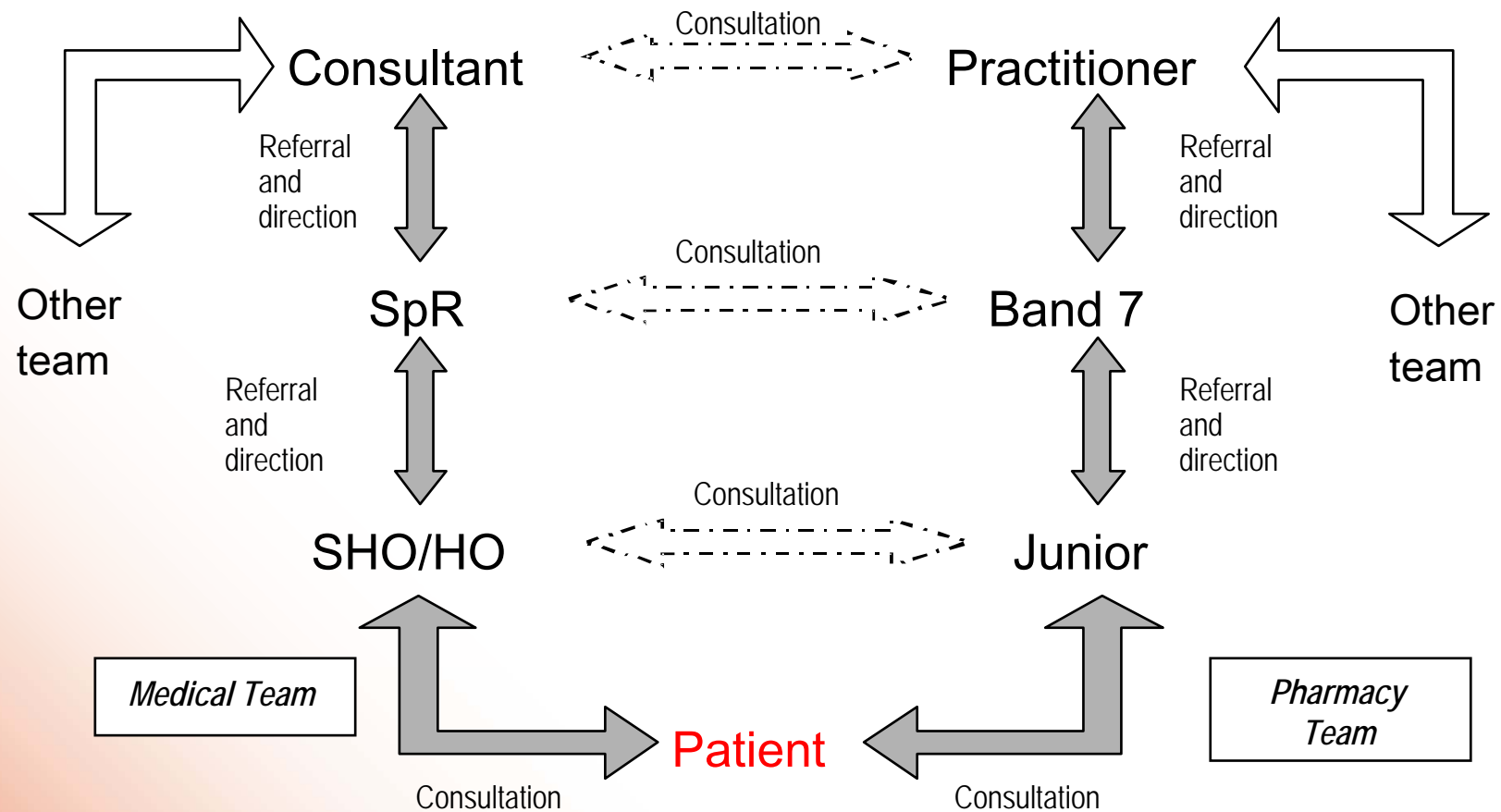
Jos Williams /Sarah Wilkinson, Specialist Pharmacist, Elderly Care, GSTT

KING'S HEALTH PARTNERS

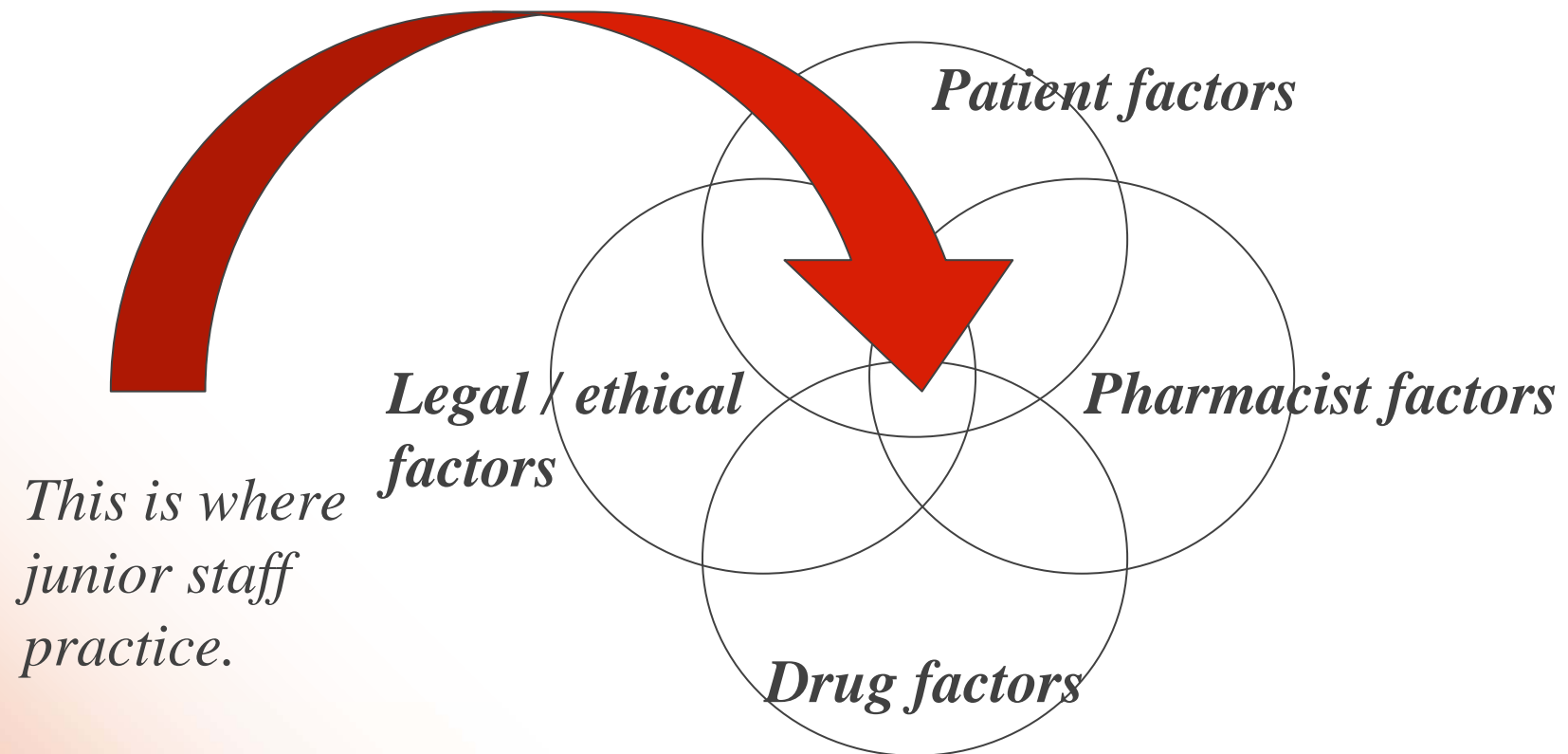
PSCAG - Educational vision for pharmacists



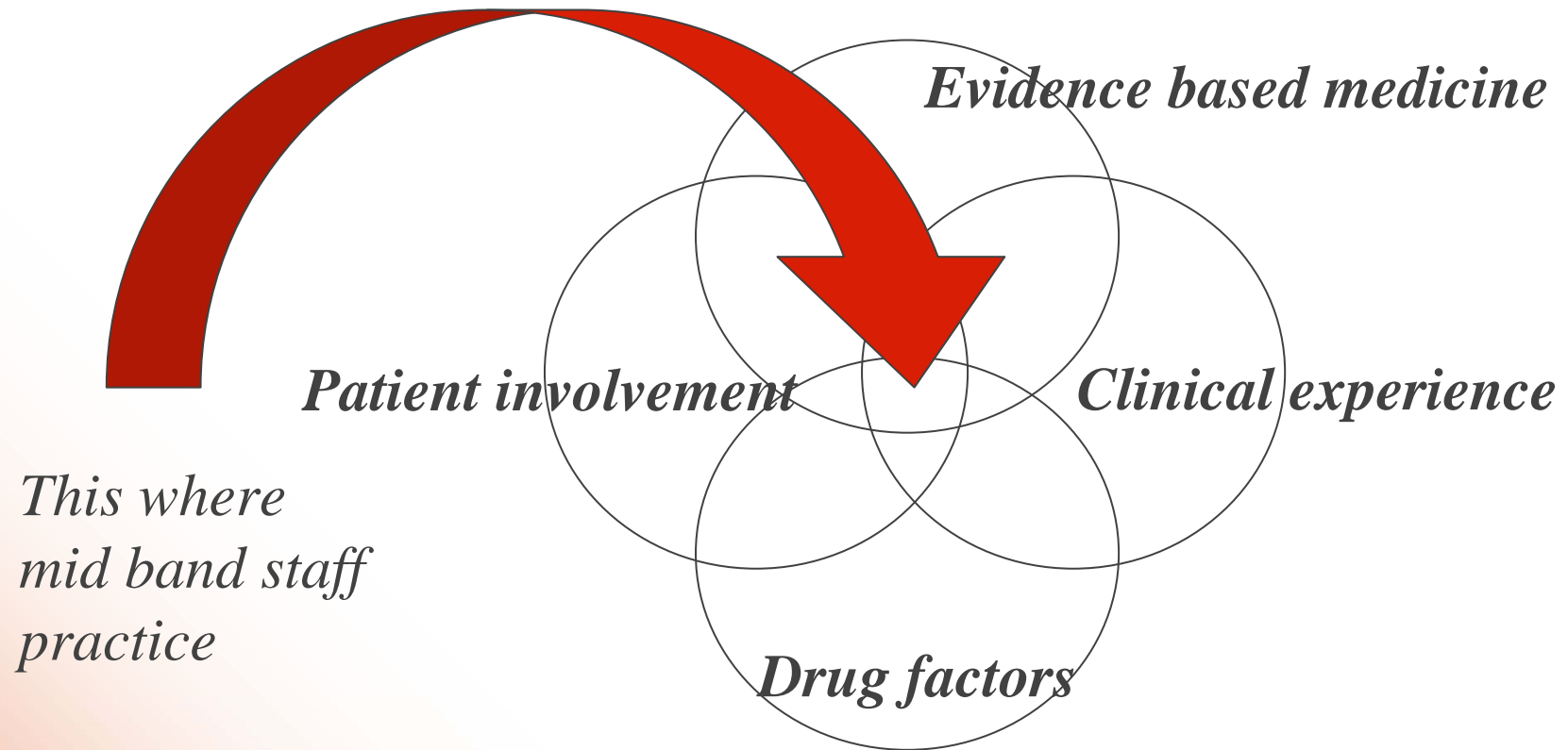
The pharmacy model of structured development



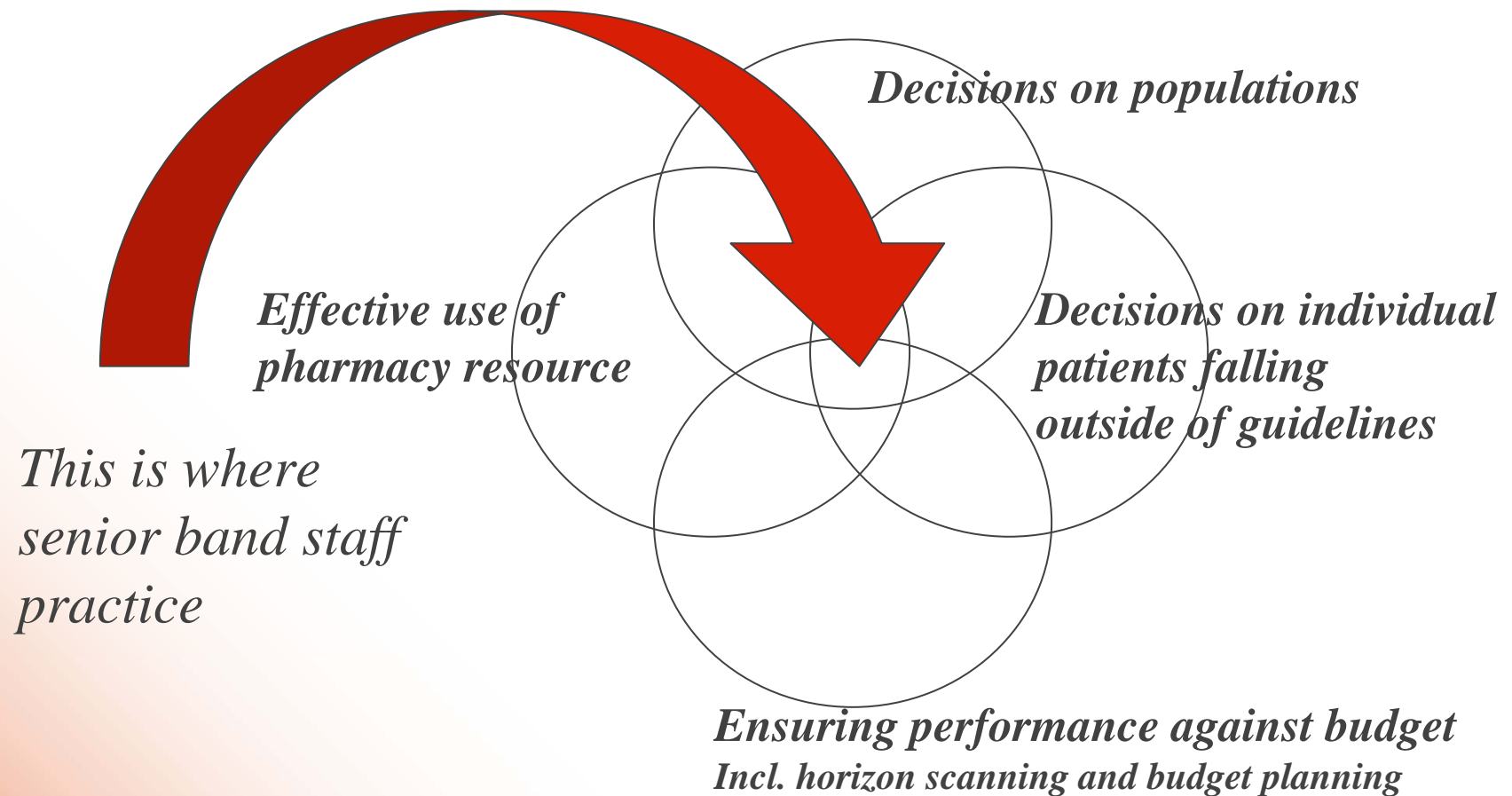
Safe use of medicines



Effective use of medicines



Economic use of medicines



Foundations of Practice



RPS Foundation Pharmacy Framework

A Framework for professional development in foundation practice across pharmacy.

ROYAL PHARMACEUTICAL SOCIETY
FACULTY

1. Patient and Pharmaceutical Care	2. Professional Practice
1.1 Patient Consultation 1.2 Need for the Drug 1.3 Selection of the Drug 1.4 Drug Specific Issues 1.5 Provision of Drug Product 1.6 Medicines Information and Patient Education 1.7 Monitoring Drug Therapy 1.8 Evaluation of Outcomes	2.1 Organisation 2.2 Effective Communication Skills 2.3 Team Work 2.4 Professionalism 2.5 Education and Learning
3. Personal Practice	4. Management and Organisation
3.1 Gathering Information 3.2 Knowledge 3.3 Analysing Information 3.4 Providing Information 3.5 Follow up 3.6 Research and Evaluation	4.1 Clinical Governance 4.2 Service Provision 4.3 Budget and Reimbursement 4.4 Organisations 4.5 Training 4.6 Staff Management 4.7 Procurement



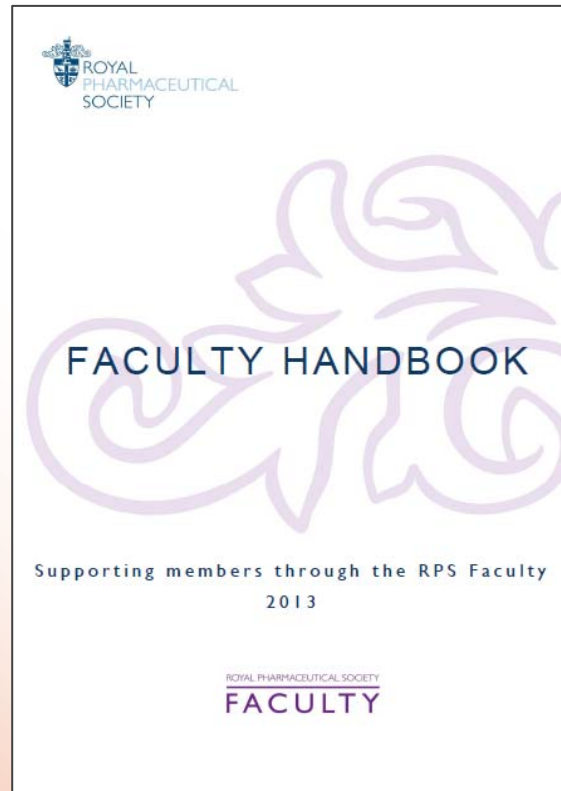
KING'S HEALTH PARTNERS

Advanced practice

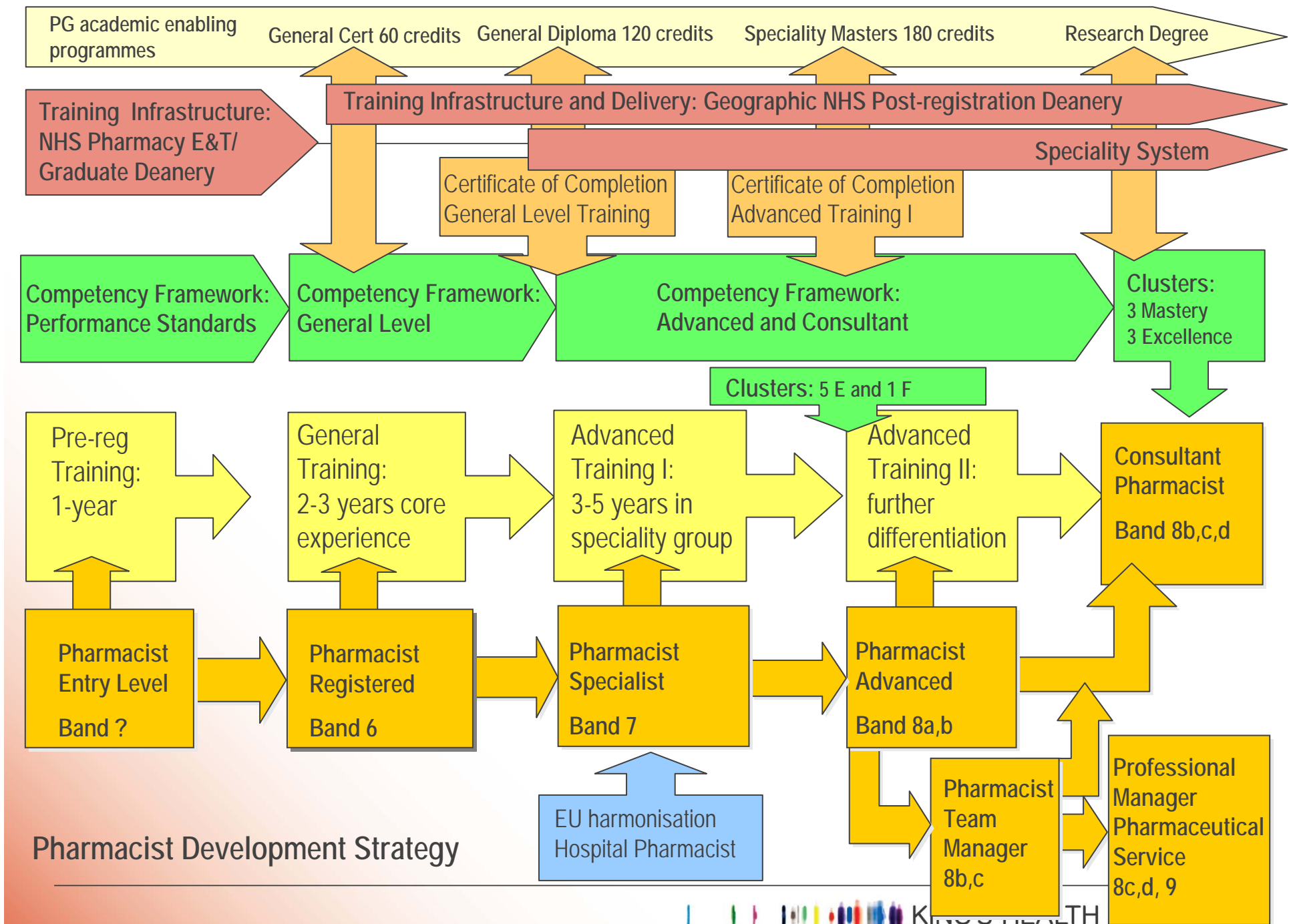


1. **Expert Professional Practice**
2. **Collaborative Working Relationships**
3. **Leadership**
4. **Management**
5. **Education, Training and Development**
6. **Research and Evaluation (R&E)**

Advanced practice



	Faculty Stage Descriptions	Post-nominals
Stage I	<p>Stage 1 Faculty Member For example, early stages of specialist training and advancement, Established in a role, performing well, advanced beyond foundation years.</p>	MFRPSI
Stage II	<p>Stage 2 Faculty Member For example an expert in an area of practice; experienced. Routinely manages complex situations and a recognised leader locally or regionally. Demonstrating excellence in practice.</p>	MFRPSII
Mastery	<p>Faculty Fellow (highest credentialed Faculty stage) For example aligned to autonomous clinical lead in community or primary care; corporate level practice in NHS; equivalent leads in academia; business / corporate leadership roles in industry; business or strategic leader in community or primary care. A nationally recognised leader in an area of expertise (often internationally) alongside a demonstrable breadth of experience and expertise. Exceptional.</p>	FFRPS



The future of clinical pharmacy

Adherence

Avoidable medicines wastage in primary care is estimated to be £150 million per year (this is a conservative estimate) (1)

Between 30 and 50% of medicines are not taken as recommended (2)

Ten days after starting a new medicine, 30% of patients are already non-adherent – of these 55% of patients don't realise they are not taking their medicines correctly, whilst 45% do (2)

Ten days after starting a new medicine, 61% of patients feel they are lacking information (3)

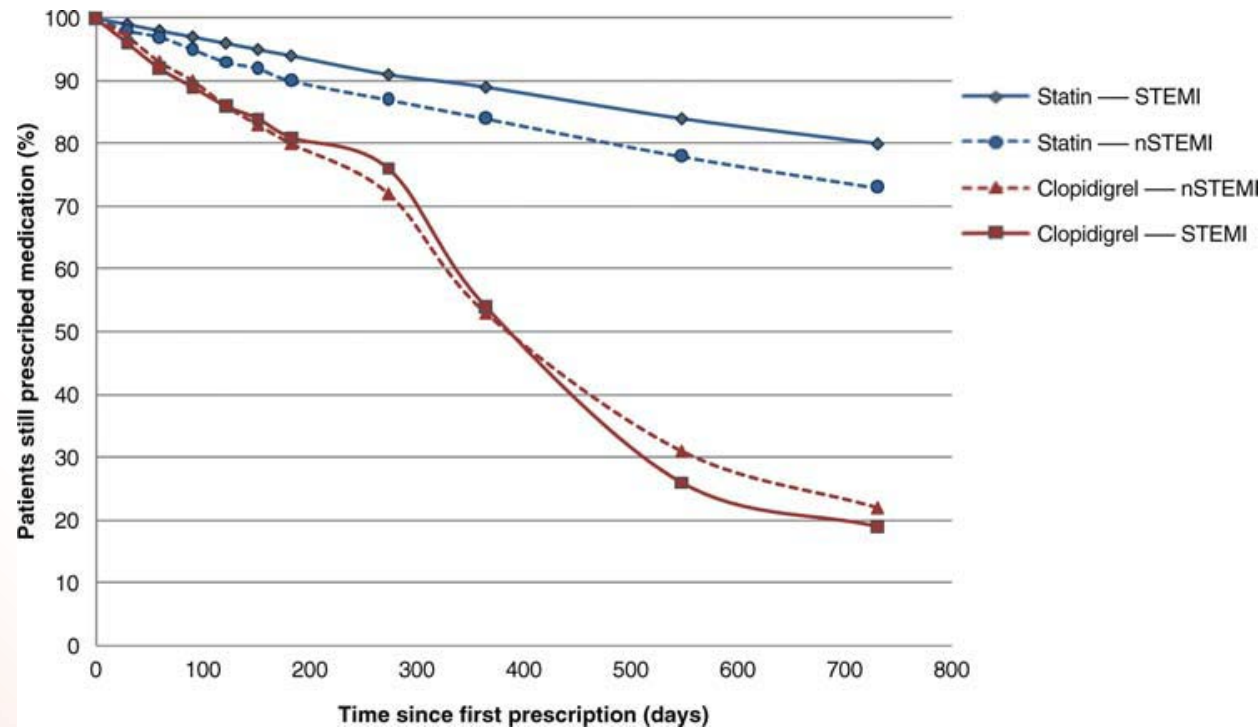
50% of patients report a problem with their medication at 10 days and at four weeks, in 22% of cases, the problem is still there (3)

Just 16% of patients who are prescribed a new medicine are taking it as prescribed, experiencing no problems and receiving as much information as they need (3)

Discontinuation of clopidogrel in primary care

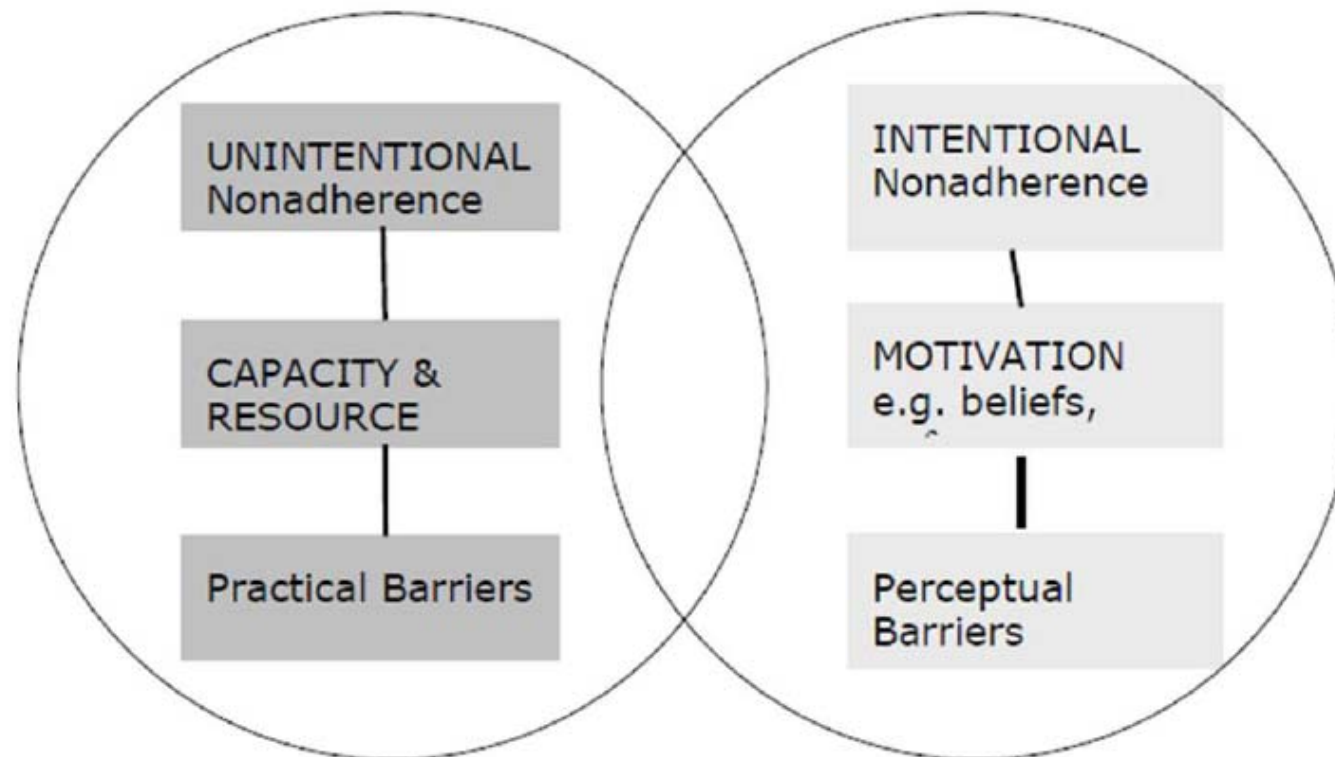
Boggon , EHJ, August 2011

Only 68.6% of patients with NSTEMI, and 62.8% of patients with STEMI, received a primary care clopidogrel prescription in the first 3 months.

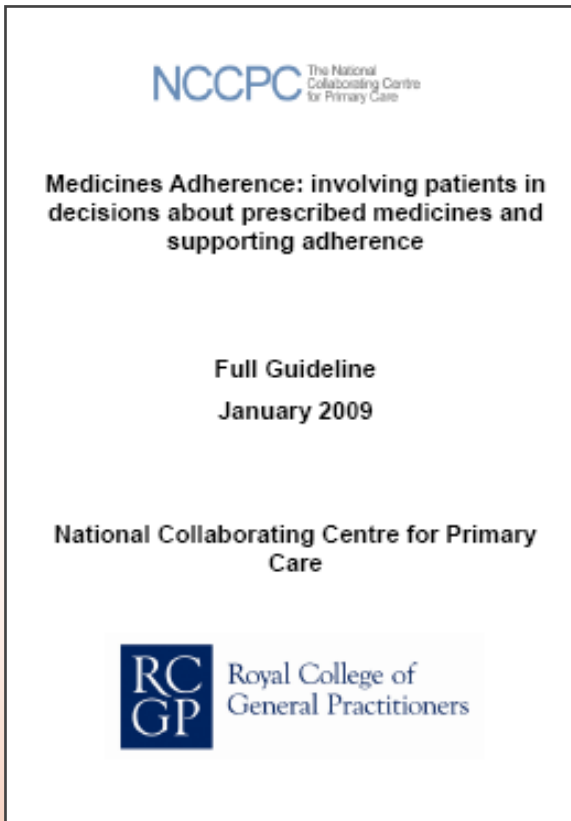


In patients prescribed clopidogrel in the 3 months following discharge , 53% NSTEMI and 54% STEMI were still being prescribed clopidogrel at 12 months
Death and non-fatal MI **doubled** (18 vs 36%)

Types of non adherence



Intentional Non-Adherence



Communication e.g.
adapting consultation
style

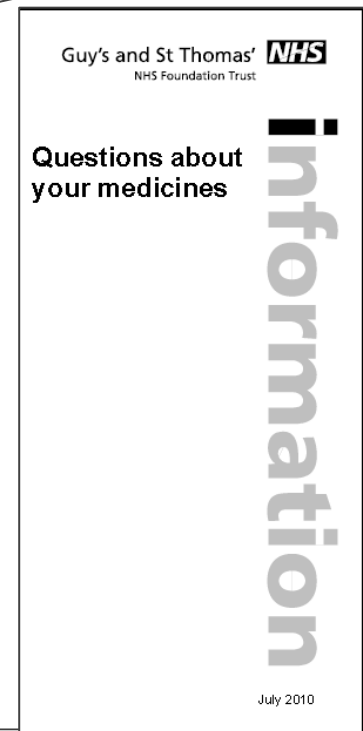
Increasing patient
involvement e.g. avoid
assumptions about
preferences

Understanding the patient's
knowledge, beliefs and
concerns about
medicines e.g. ask if
patient has any specific
concerns

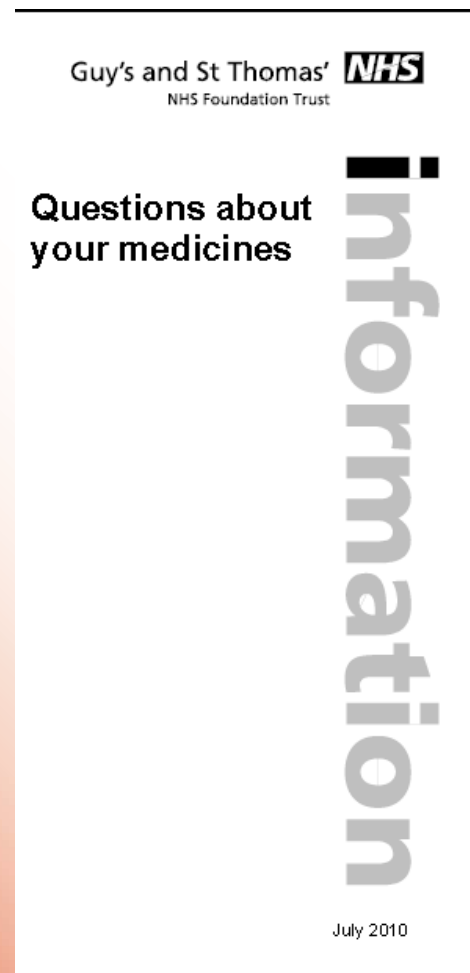
Providing information

Cognitive Behavioural Therapy
Motivational Interviewing
Health Coaching

NICE (Clinical Guideline 76)



Empowering patients and pharmacists



Potential Problems		Too much	About right	Too little	None received	None needed	% Satisfied	% improvement in satisfaction	% change in "None needed" T0-T1
10. Whether the medicine has any side effects	T0	2	44	17	15	22	66	11	11
	T1	0	66	11	13	11	77		
11. What are the risks of you getting side effects	T0	3	39	21	20	18	57	14	10
	T1	0	63	13	15	8	71		
12. What you should do if you experience side effects	T0	1	40	20	20	19	59	20	6
	T1	0	66	9	13	3	79		



Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou



Information about medicines to cardiac in-patients: Patient satisfaction alongside the role perceptions and practices of doctors, nurses and pharmacists

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ARTICLE INFO

Article history:
Received 17 December 2010
Received in revised form 18 April 2011
Accepted 20 April 2011

Keywords:
Patient satisfaction

ABSTRACT

Objective: To explore the satisfaction of cardiac in-patients regarding the information they received about their medicines, and the role perceptions and practices of practitioners whose responsibility it was to provide such information.

Method: A questionnaire was constructed by selecting medicine information topics from a validated instrument, the Satisfaction with Information about Medicines Scale. Patients and practitioners were recruited from cardiac wards at a London teaching hospital providing tertiary care.

Results: Questionnaires were returned by 140 patients and 52 doctors, 53 nurses and 4 pharmacists.

Summary

Medicines are dangerous

Pharmacy activity (including “clinical pharmacy”) reduces patient risk

Clinical pharmacy activity improves hospital performance

Reducing risk and improving performance reduces cost

We need a suitably skilled workforce to deliver this

Despite all this patients still don't take their medicines

Pharmacists are ideally placed to support patients to take medicines (but will require different skills in addition)

Clinical pharmacy

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Guy's and St Thomas' **NHS**
NHS Foundation Trust

Clinical pharmacy....*the age of wisdom?*

- Medication error
 - 8% of 2,000 daily reports to NPSA relate to medicines [NRLS April-June 2006]
 - 1,400 serious medication errors detected in 40 trusts (5 days) [Nicholls et al, 2004]
 - Prescribing errors in 1.5% of medication orders [Dean et al, 2002a]
 - Causes of prescribing error [Dean et al, 2002b]
- Physician-accepted interventions
 - 3,3371 interventions from 2,220 ward visits in 27 hospitals (5 days)
 - Ward, grade and time predict rate [Barber et al, 1997]
- Outputs of medicines management (NI)
 - length of stay reduced by 2 days
 - readmission rates decreased by 20%
 - fiscal benefits included a return of £4.80 to £8.00 for every £1 invested [Scott, GHP/UKCPA 2006]
- Association with outcomes (US)
 - Pharmacists per 100 beds and rates of adverse drug reactions
 - Pharmacists per 100 beds and mortality rates
 - Clinical pharmacy services and lower mortality rates [Bond et al, 2006, 1999a, 1999b]