Imperial College London
BUSINESS SCHOOL

Paying for performance and quality incentives in healthcare: Lessons from the UK

Carol Propper

Helsinki February 2015

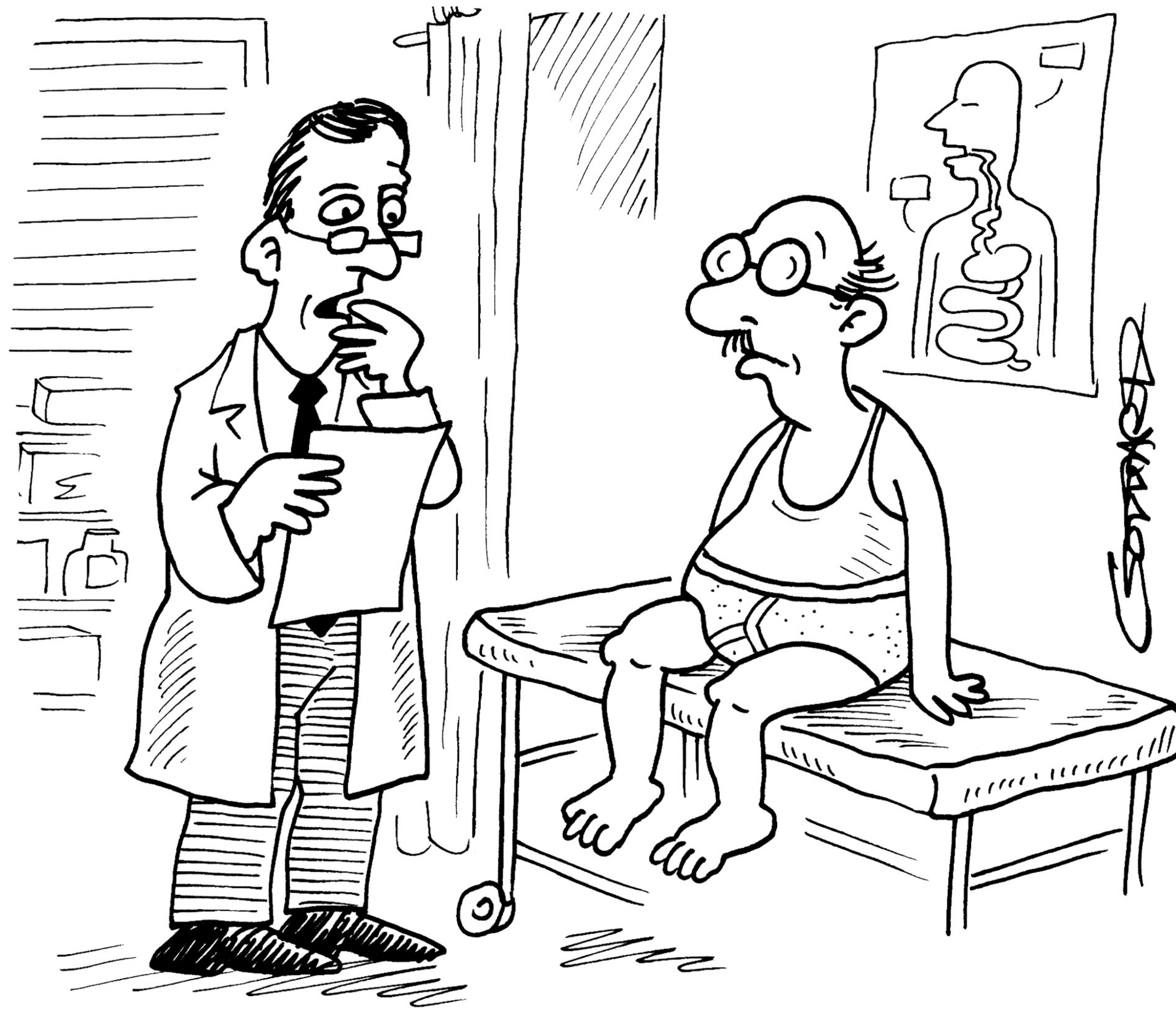
© Imperial College Business School

Imperial College
London
BUSINESS SCHOOL

The popular view

© Imperial College Business School

"Any questions regarding our financial incentive program?"



"It's bad news - your illness isn't on our performance targets."

© Imperial College Business School

- Financial incentives
  - focus behaviour on a narrow set of activities
  - lead to some things not being done
  - induce unwanted side effects
- But ....
- Growing interest in use of P4P in public and healthcare sectors
- Response to low productivity in public sector
  - e.g. JTPA scheme in USA, Israeli teachers, schools in USA, schools in China, numerous schemes in health care, …

© Imperial College Business School

P4P in health care

- Use for both providers and now growing interest in use for users of health care – paying patients and consumers to stay/get well
- Focus here on payments to providers
- Begin with the basics of a P4P scheme
- Examine some UK examples
- Draw conclusions

© Imperial College Business School

P4P: Definition

- Payment for output
  - Distinct from wage/payment which is paid regardless of output
  - Piece rate payment, performance bonuses
- Nature of standard incentive scheme
  - $Y = w + mx$, where x = observed and measured output, m = strength of incentive scheme, w = wage (payment made in all states of the world), Y = monetary reward

Theory

- Standard contract design model = Principal–agent model
- Principle wants to get agent to produce output
  - agent exerts effort but effort not observed, though output is observed
  - Relationship between efforts and output only partially under control of agent
  - Principal needs to design reward system to induce maximum effort from agent
- In simple setting strength of scheme linked to three things

  $m = 1/(1+rcv)$, where v = riskiness of the project, c = cost of agent's effort, r = risk aversion of agent

P4P: Theory

- How is this different for public service provision?

Theory – how is this different for public services?

Key features of public services

- Multiple tasks - one reason why the organisation is in the public sector or voluntary sectors is that objectives may be very vague and hard to measure
- Difficulty of measurement outcomes
- Motivated agents - if agents get utility from specific action, specific bonuses can be smaller

Existence of these features may change nature of contracts that can be offered to those who produce public services

Multiple tasks – government agencies often have several task to achieve

- If agent performs several tasks and the measurement of these is not equally good, may not be efficient to give explicit incentives
  - Example: health care providers can invest effort to cut waiting lists, but also harder to measure outputs like quality of care
  - If hospitals are rewarded only on decreasing waiting lists, they will cut down on their effort and the outcome may be less desirable than if they are paid a flat fee

Difficulty of measurement

- Certain public organisations (e.g. police) where no easily available measures of performance or inputs (Wilson – coping organisations)
- Primary way of controlling behaviour is by costly audits of the details of cases handled by individuals
- Even where output is observed, may be difficult to measure
- Tendency to focus on the easily measured
  - Leads to distortion of effort towards the easily measured (e.g. teaching to the test)

Lessons from the public sector/public services

Motivated agents

- Where agents are intrinsically motivated, can use motivation rather than incentives
- Broader worry that use of high powered incentives will drive out intrinsic motivation

Bottom line

- Incentives where public services are produced will be weaker than in private sector
- But they are not necessarily zero

Evidence from healthcare

- Health care buyers can pay providers on the basis of:
  - an agreed service specification
  - population coverage (capitation)
  - volume
  - performance
- Internationally, more third-party payers are linking a proportion of provider revenue to achievement of quality indicators

Increased adoption of P4P is occurring despite a scant evidence base

- By 2009, few schemes had been evaluated at all
- Evaluations show at best modest and temporary effects on quality
- Cochrane review (Flodgren, 2011) found no evidence that financial incentives lead to improvements in health outcomes
- More inclusive review (van Herck, BMCHSR, 2010) highlighted that several aspects of P4P may be important:
  - the design of schemes
  - their mode of implementation
  - the context in which they are introduced

Imperial College London
BUSINESS SCHOOL

The UK Quality and Outcomes Framework (The QoF)

- Payments for performance for family doctor practices in the UK general practice
  - Description of scheme
  - Evidence on the impact of the QOF
  - Assessment

Description of scheme

UK General Practice

- All citizens must be registered with a general practitioner
- Typical practice population 7,000 (increasing)
- Average 4-5 GPs per practice
- Gate-keeping role for secondary care
- 85% of GPs are independent contractors with the NHS
- GPs used to working in an incentivized environment
- Traditional GP contract developed piecemeal over decades - mixture of capitation, salary, fee for service and grants
- New contract in force since 2004, including a major system of incentives for quality (the QoF)

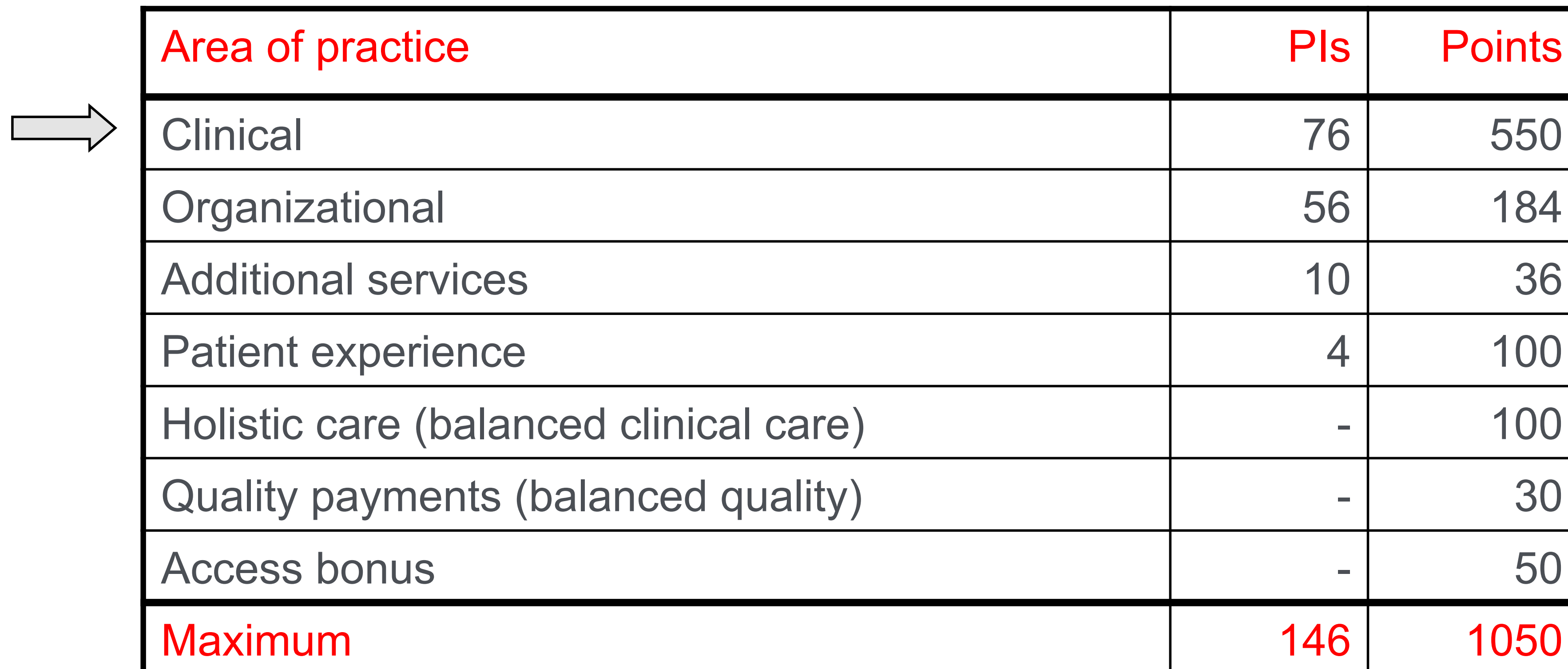
Quality and Outcomes Framework (QOF)

- Developed in negotiation between government and providers
- Implemented in April 2004
- Still in operation
- Major emphasis on clinical quality
- About 20% of income determined by payments related to QOF quality incentives
- Major reliance on self-reporting (with external audit)

http://www.qof.ic.nhs.uk/

Imperial College London
BUSINESS SCHOOL

Quality and Outcomes Framework 2004/05: Indicators and points at risk



Area of practice	PIs	Points
Clinical	76	550
Organizational	56	184
Additional services	10	36
Patient experience	4	100
Holistic care (balanced clinical care)	-	100
Quality payments (balanced quality)	-	30
Access bonus	-	50
Maximum	146	1050

Quality and Outcomes Framework: Clinical indicators

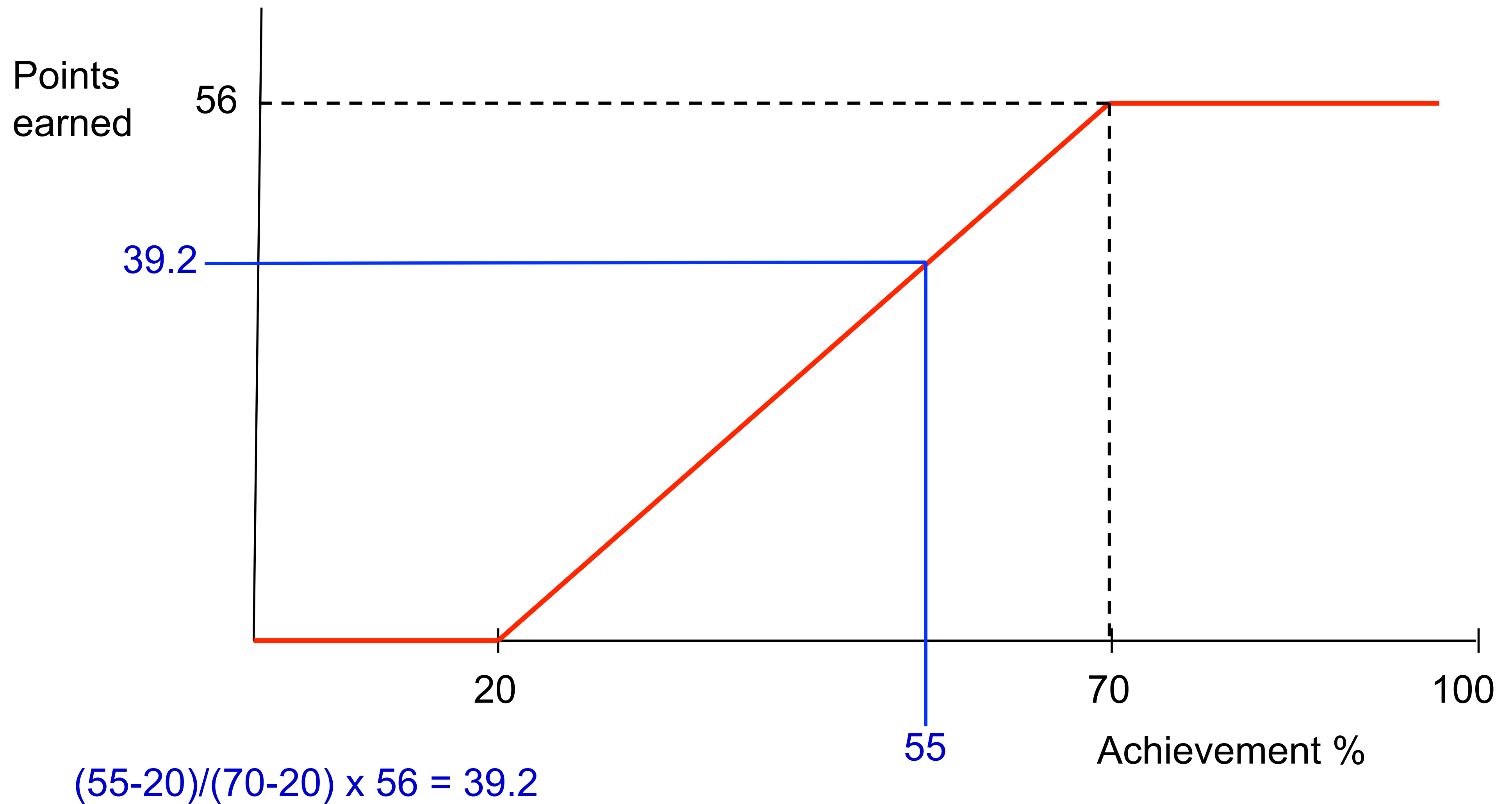
Domain	PIs	Points
CHD including LVD etc	15	121
Stroke or transient ischaemic attack	10	31
Cancer	2	12
Hypothyroidism	2	8
Diabetes	18	99
Hypertension	5	105
Mental health	5	41
Asthma	7	72
COPD	8	45
Epilepsy	4	16
Clinical maximum	76	550

Hypertension: Indicators, scale and points at risk

Records	Min	Max	Points
BP 1. The practice can produce a register of patients with established hypertension			9
Diagnosis and initial management			
BP 2.The percentage of patients with hypertension whose notes record smoking status at least once	25	90	10
BP 3.The % of patients with hypertension who smoke, whose notes contain a record that smoking cessation advice has been offered at least once	25	90	10
Ongoing Management			
BP 4.The % of patients with hypertension in which there is a record of the blood pressure in the past 9 months	25	90	20
BP 5. The % of patients with hypertension in whom the last blood pressure (in last 9 months) is 150/90 or less	25	70	56

Imperial College London
BUSINESS SCHOOL

Threshold indicator BP5



Imperial College London
BUSINESS SCHOOL

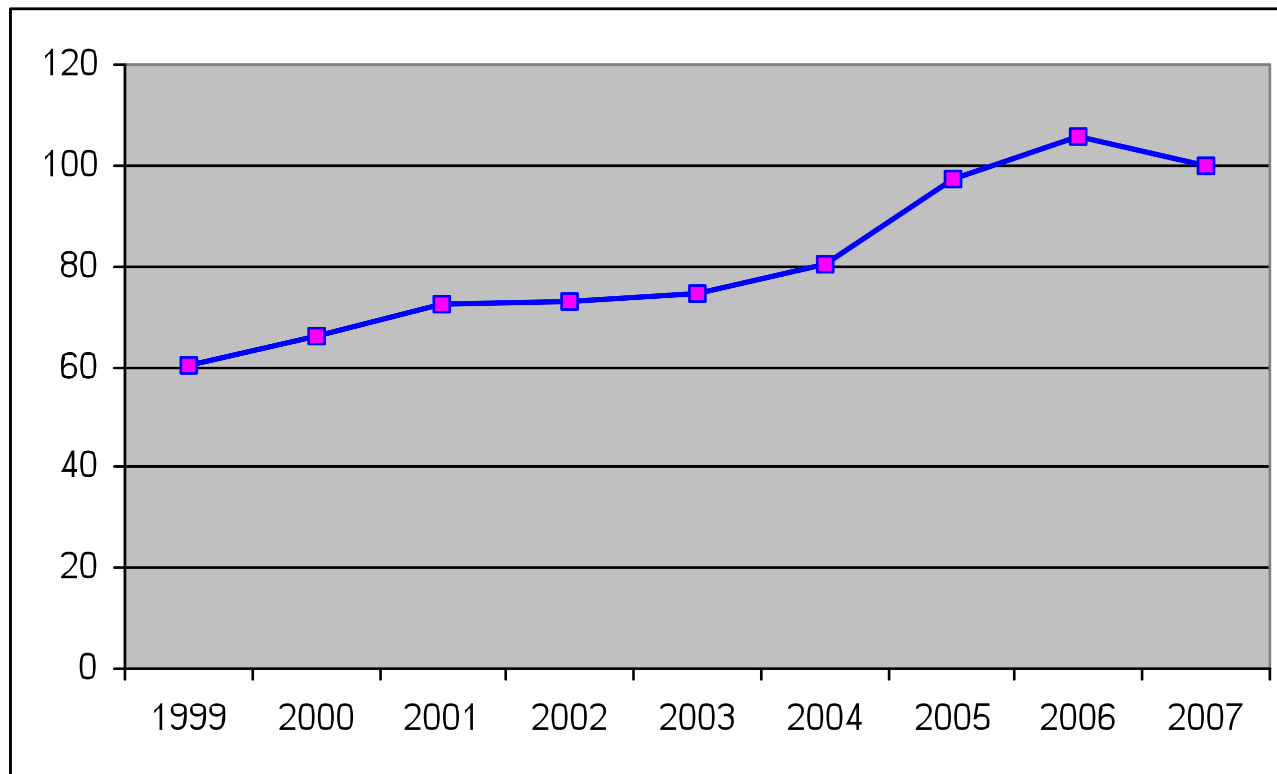
Achievement in England

	2004/5	2005/6	2006/7	2007/8
Average points score (%)	91.3	96.2	95.5	96.8
Practices achieving full marks (%)	2.6	9.7	5.1	7.5

Source: NHS Information Centre http://www.qof.ic.nhs.uk/

Imperial College London
BUSINESS SCHOOL

GP Earnings 1998/99 to 2006/07 (real growth, GDP deflator, 2006/07 = 100)



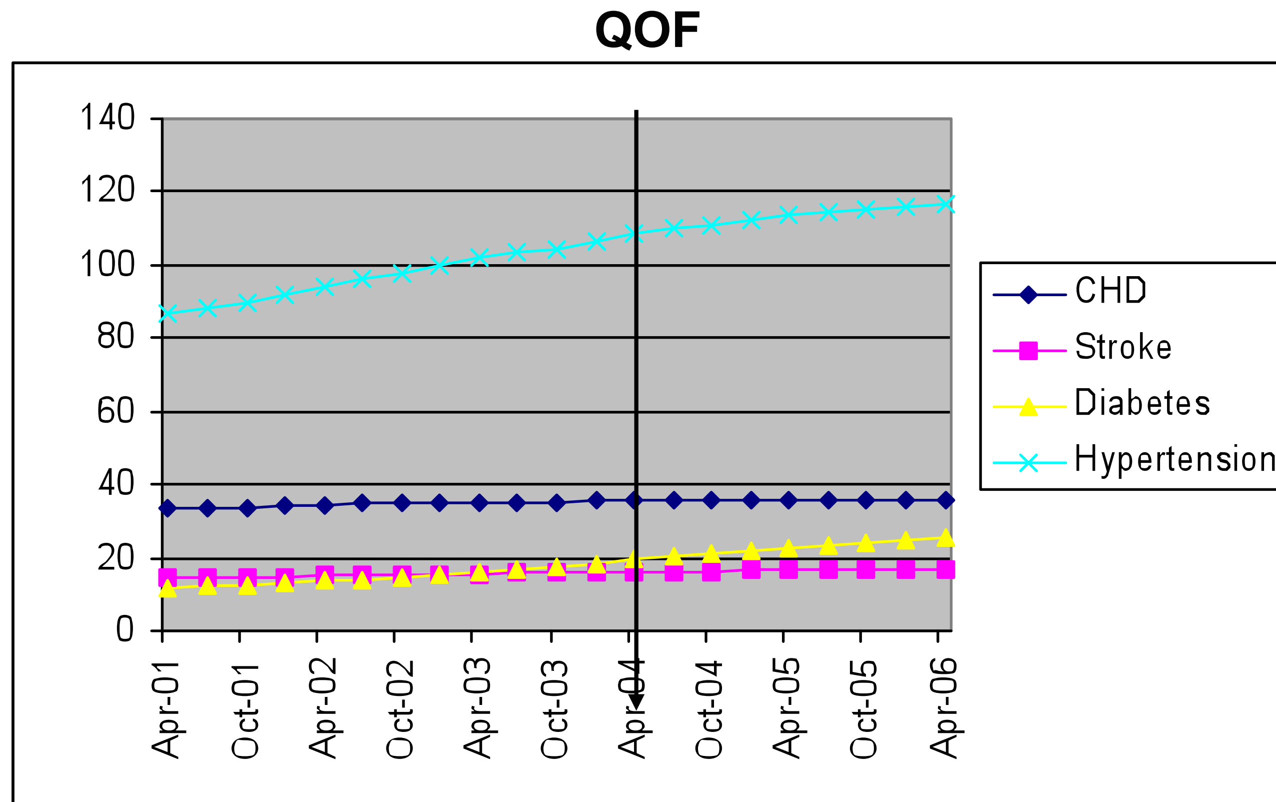
Source: NHS Information Centre (2009) *GP Earnings and Expenses Enquiry 2006/07, Final report*

Imperial College London
BUSINESS SCHOOL

The Effect

Imperial College London
BUSINESS SCHOOL

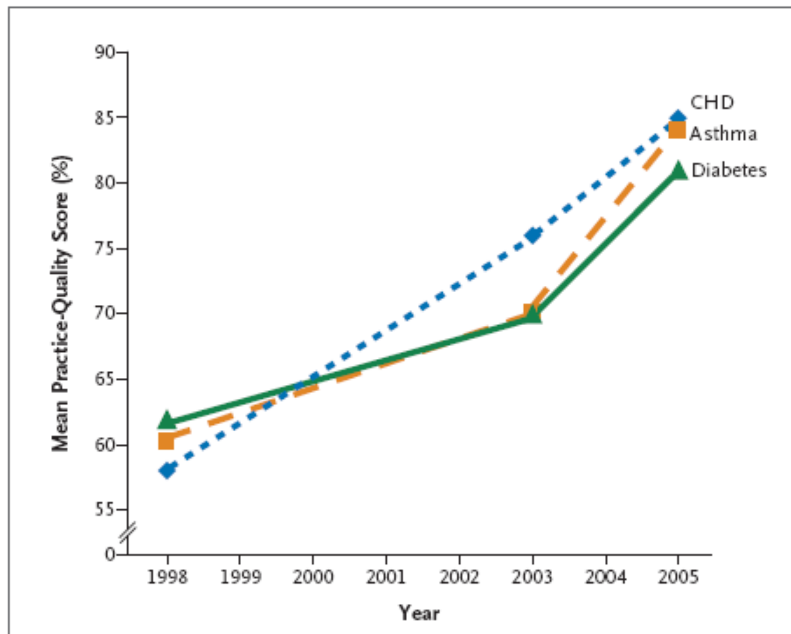
Trends in prevalence 2001-2006



Rates per 1,000 population CHD = Coronary heart disease

Copyright © 2007 QRESEARCH (Version 12) and The Information Centre for health and social care.

Mean Scores for Clinical Quality for Coronary Heart Disease, Asthma, and Type 2 Diabetes, 1998 to 2005.



"The quality of care for coronary heart disease (CHD), asthma, and type 2 diabetes was improving between 1998 and 2003, before the introduction of pay for performance. The rate of improvement in quality of care increased significantly for diabetes and asthma between 2003 and 2005, after the introduction of pay for performance; the rate for coronary heart disease, which was increasing most rapidly before pay for performance, continued at the same rate after pay for performance was introduced."

Campbell, S., Reeves, D., Kontopantelis, E., Middleton, E., Sibbald, B., and Roland, M. (2007), "Quality of Primary Care in England with the Introduction of Pay for Performance", *New England Journal of Medicine*, 357(2), 181-190.

Imperial College London
BUSINESS SCHOOL

Mean Difference in Improvement for Indicators with and without incentives

Table 4. Mean Difference in Improvement for Indicators with and without Incentives.*

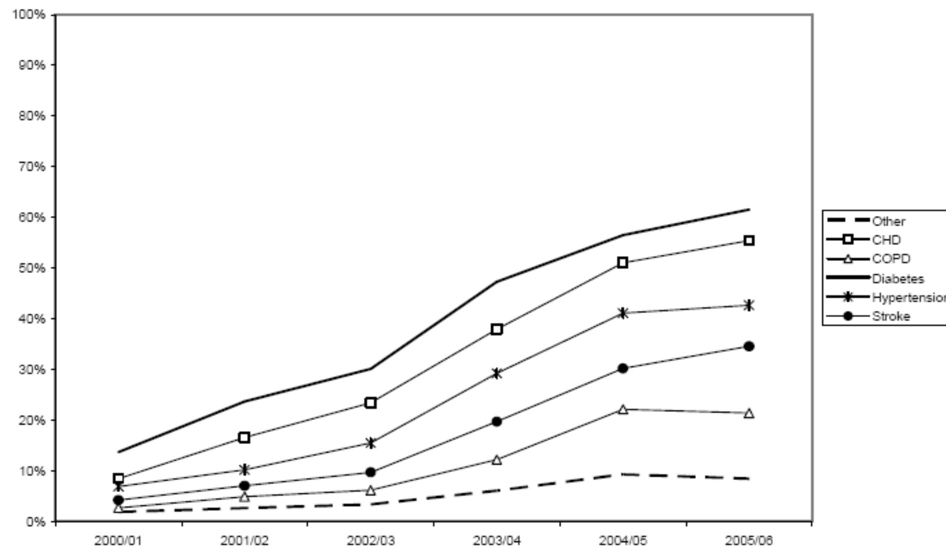
Category	Mean Difference (95% CI)	P Value
Coronary heart disease	0.53 (−0.01 to 1.08)	0.054
Asthma	0.03 (−0.45 to 0.51)	0.904
Type 2 diabetes	0.08 (−0.32 to 0.49)	0.682

"The quality of performance for indicators with incentives in all three conditions was substantially higher at all three time points than for those without incentives. However, in all conditions, the rate of improvement between 2003 and 2005 for clinical indicators for which financial incentives were provided, as compared with those for which they were not, did not differ significantly from the rate predicted on the basis of the trend between 1998 and 2003."

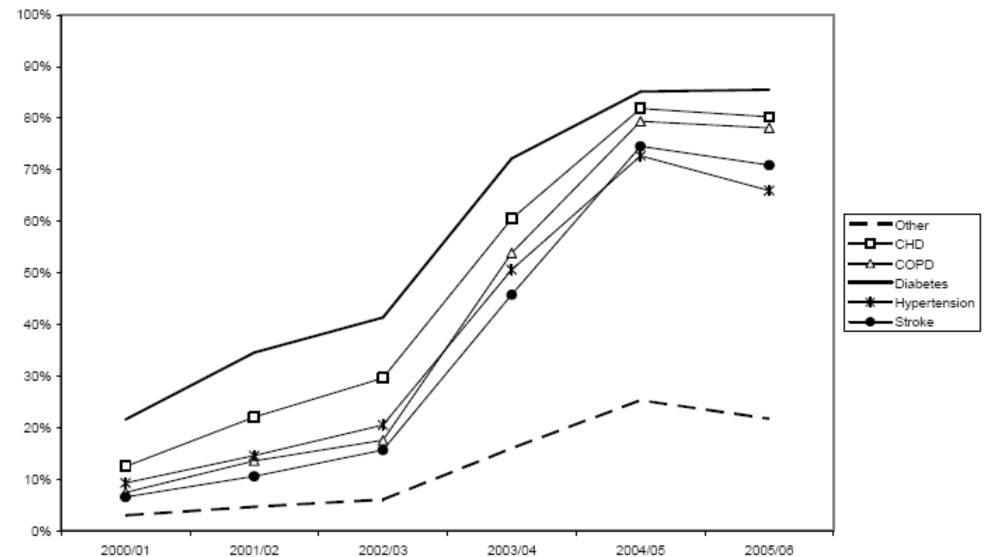
Campbell, S., Reeves, D., Kontopantelis, E., Middleton, E., Sibbald, B., and Roland, M. (2007), "Quality of Primary Care in England with the Introduction of Pay for Performance", *New England Journal of Medicine*, 357(2), 181-190.

Evidence: Impact on recording

Smoking status recording increases by 14.9 percentage points more than alcohol status recording when the QOF is introduced



Alcohol status recording by group and year



Smoking status recording by group and year

Sutton, M., Elder, R., Guthrie, B. and Watt, G. (2007),
"What quality improvement did the Quality and Outcomes Framework produce?"
Paper Presented to the Health Economics Study Group, September 2007

The Cost

- In the first three years of the contract the NHS spent £1.76 billion (= 9.4 per cent more than the minimum that the Department committed to spend)
- Main causes of the overspending in the first two years were:
    - a significant underestimate of achievement levels on the Quality and Outcomes Framework
    - the additional cost of providing out-of-hours care

- National Audit Office (2008), *NHS Pay Modernisation: New contracts for general practice services in England* http://www.nao.org.uk/publications/0708/new_contracts_for_general_prac.aspx

Imperial College London
BUSINESS SCHOOL

Assessment

- Quality improving before the QOF was introduced
- The QOF may have led to a further small, but possibly transient, increase in quality
- Targets seem to have been set at too low a level
- Rewards appear to have been excessive
- Only modest evidence that 'unmeasured' quality is suffering relative to measured quality
- Evidence of some small amount of 'gaming' to achieve improved scores

In summary, only a small quantitative impact has so far been detected

Advancing Quality Scheme

- First hospital P4P scheme to be introduced in the UK (October 2008)
- US Medicare introduced hospital pay for performance under Value Based Purchasing Programme in 2012
- Upto 2009 only three hospital P4P schemes had been evaluated and good evidence only available for one, the Hospital Quality Demonstration (HQID)
- Evaluations show only modest and short term effects on hospital process of care
- Evidence of an effect on patient outcomes is even weaker

Description

- Based on Hospital Quality Incentive Demonstration (HQID) from the US
- Adopted by all 24 NHS Acute Trusts in the North West SHA
- Covered five patient groups: pneumonia, CABG, AMI, heart failure, hip/knee
- Performance on 28 quality indicators was reported by participating Trusts
  – collected and fed back quarterly and published annually
- Tournament scheme (for first 12 months)
  – top 6 Trusts received a 4% bonus on their tariff payments
  – next 6 Trusts received a 2% bonus on their tariff payments
- Bonuses allocated internally to clinical teams for investment in care
  - Larger than in similar US programmes and invested in quality improvement programmes

Evaluation

Sutton et al (2012) focus on mortality

- Deaths within 30 days of admission (in any hospital in England)
- For patients admitted for:
  - three incentivised conditions (AMI, heart failure and pneumonia)
  - six reference conditions
  - Risk-adjustment using age and sex, primary diagnosis, 31 co-existing conditions, type of admission, residential location on admission
- 18 months before and first 18 months after introduction
- Comparison of 24 North West Trusts with 132 Trusts in rest of England

Assessment

- Overall reduction in mortality of 1.3 percentage points in the North West when the P4P was introduced
  - Relative rate reduction of 6%
  - Significant fall only in pneumonia
- Over 18 months equates to a reduction of 890 deaths (95% CI, 260 -1500) amongst population of 70,644 patients with these conditions
- Largest reductions in mortality achieved in small Trusts and Trusts rated "excellent" or "good" by CQC
- Cost-effectiveness
  – scheme cost £13M to set-up, administer and provide bonuses
  – estimated to have generated over 3,000 QALYs
  – cost-per-QALY well below NICE threshold

How and why

- Results differ from those found for HQID in the US
- In AQ:
  - Providers adopted range of quality improvement strategies
  - Identification and targeting of particular patient groups
- Principal differences from US scheme
  - Universal participation (not just Medicare)
  - Size of bonus
  - Probability of bonus
  - Regional collaboration
- Financial incentive not as high-powered as QOF
- AQ is a P4P programme:
  - regional initiative
  - new data collection and public reporting
  - bonuses to clinical teams

Conclusions

- Increased use of schemes to get improvements in quality of care
- Pay for performance has large ideological support even if success to date is modest
- Importance of scheme design

Recommendations for P4P designs

- Involve clinical professionals in design
- Set a quantitative ‘baseline’ against which the impact of the P4P scheme can be measured
- Seek out performance measures in ‘hard to measure’ domains
- Evaluate the scheme carefully
  - Measured domains
  - Unmeasured domains
- Start with pilots, testing much lower rewards than used in the QOF
- Undertake continuous monitoring and review of scheme

Imperial College London
BUSINESS SCHOOL

Thank you

Imperial College
London
BUSINESS SCHOOL

Further reading

- Campbell, S., Reeves, D., Kontopantelis, E., Middleton, E., Sibbald, B., and Roland, M. (2007), "Quality of Primary Care in England with the Introduction of Pay for Performance", *New England Journal of Medicine*, 357(2), 181-190.
- Gravelle, H., Sutton, M. and Ma, A. (2007), "Doctor behaviour under a pay for performance contract: evidence from the Quality and Outcomes Framework", Centre for Health Economics Research Report 28, University of York.
- Hippisley-Cox, J., Vinogradova, Y. and Coupland, C. (2007), "Time Series Analysis for selected clinical indicators from the Quality and Outcomes Framework 2001-2006", Leeds: The Information Centre for Health and Social Care.
- Smith, P. and York, N. (2004), "Quality incentives: the case of UK general practitioners", *Health Affairs* 23(3), 112-118.
- Sutton et al (2012) Reduced Mortality with Hospital Pay for Performance in England N Engl J Med 2012; 367:1821-1828 http://www.nejm.org/doi/full/10.1056/NEJMsa1114951