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Achieving diabetes management targets in UK primary care – impact on mortality and hospital admissions

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The UK's National Health Service

A government-funded system that provide universal coverage to all residents of the UK

Established in 1948

Access to health services is free including both primary care and specialist care

Some charges for medication, and also for optical and dental services

All residents of the UK can register with a general practice (primary care practice)

All general practices in the UK are full computerised

Data from electronic medical records aggregated and used for research

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UK Quality & Outcomes Framework (QOF)

Introduced as part of the new general practice (primary care physician) contract in 2004

The use of explicit financial incentive to reward general practices for the achievement of specific evidence-based targets

Examples of QOF targets for diabetes

- DM008 (HbA1c < 7.5% / 59 mmol/mol)
- DM002 (BP ≤ 145/85)*
- DM004 (TC ≤ 5.0 mmol/L).

*Modified target (usually 150/90)

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Why implement a pay for performance scheme?

- The UK's National Health Service (NHS) faces major challenges
- The NHS has improved substantially in recent years and needs to continue to improve
- Population of the UK is ageing
- Greater support is needed for frail, older patients
- Prevalence of many chronic diseases – such as diabetes – is increasing
- Greater focus in prevention and healthy living needed
- Quality of care can vary between different family practices and geographical areas
- Considerable financial pressures on government spending

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Criticisms of QOF

Links pay to performance and therefore rewards higher quality of care

Provides standardised information on diabetes prevalence and quality of care for each general practice in the UK

May lead to focus on ‘incentivised’ areas and neglect of ‘unincentivised’ areas of care

For many indicators, particularly for process indicators, little variation between practices

Promotes a ‘tick-box’ culture

Has not been shown to lead to improved outcomes

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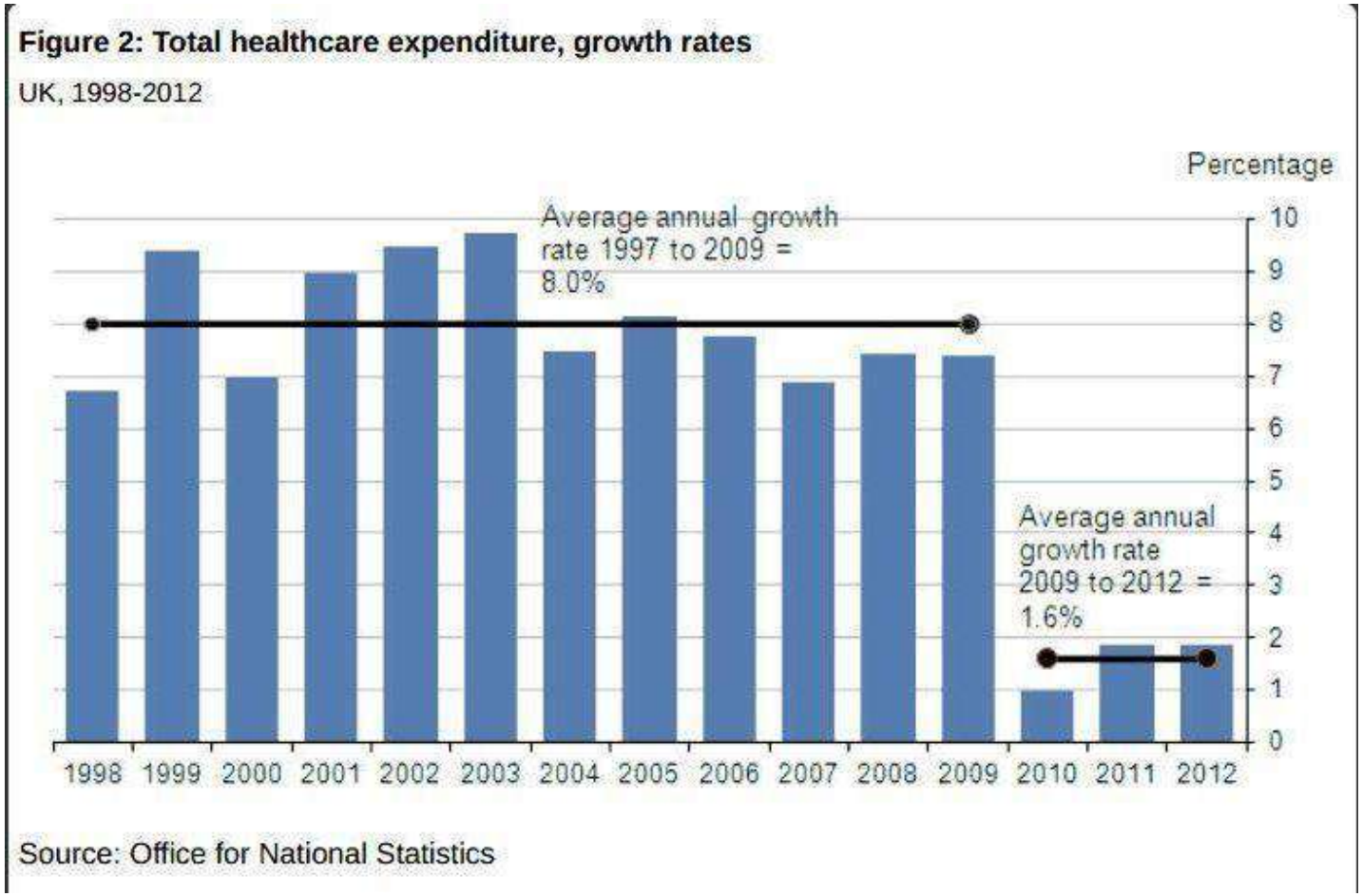
Annual growth in NHS spending 1998-2012



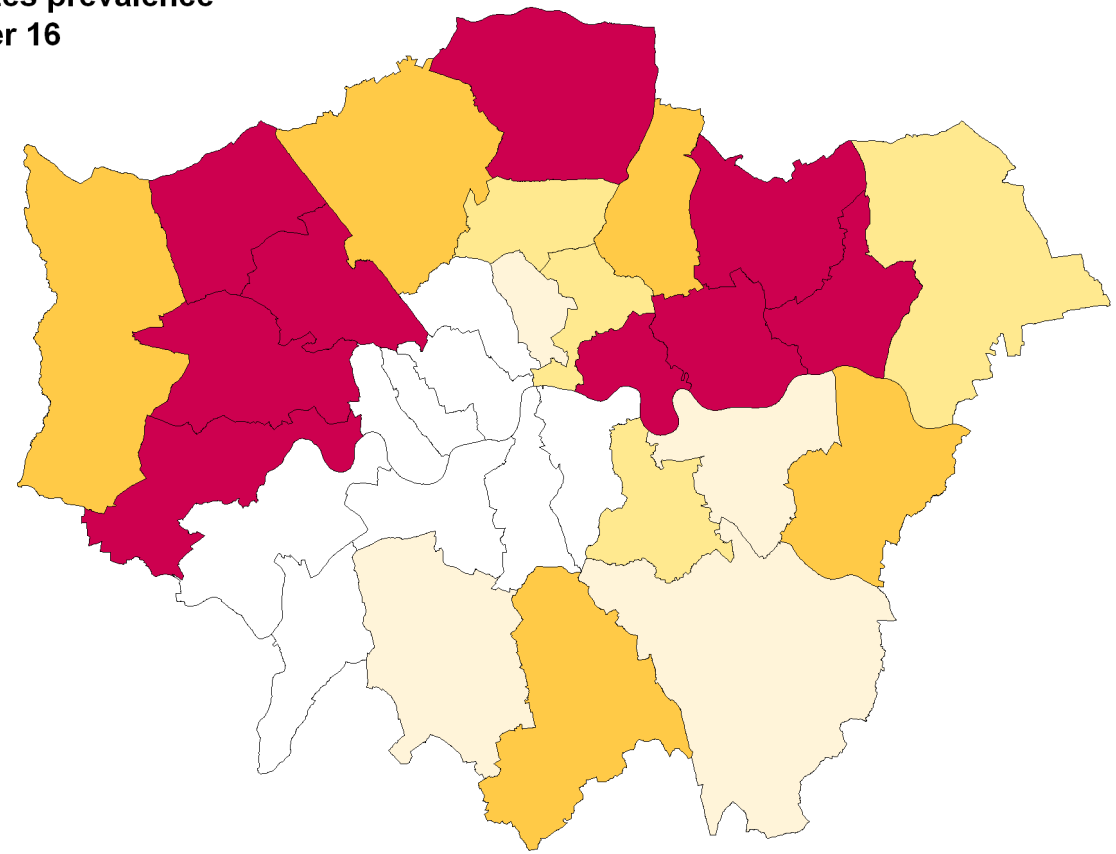
YHPHO
YORKSHIRE & HUMBER
PUBLIC HEALTH OBSERVATORY

The Local Burden – Today

diabetes
Health Intelligence
A STRATEGIC PROGRAMME WITHIN YHPHO

Diagnosed diabetes prevalence in those aged over 16

- Over 6%
- 5.5% to 6%
- 5% to 5.5%
- 4.5% to 5%
- Up to 4.5%

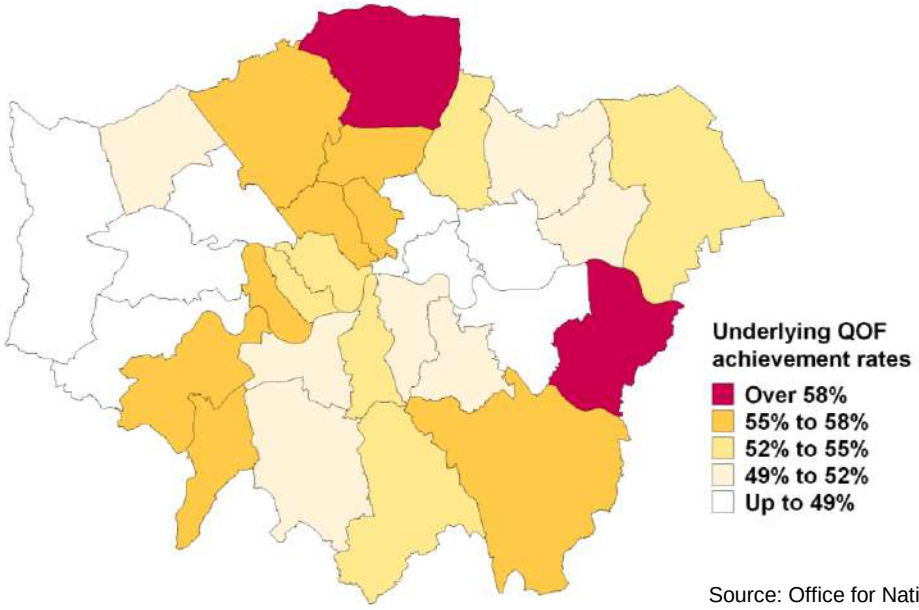


The Local Burden - Variation in Outcomes

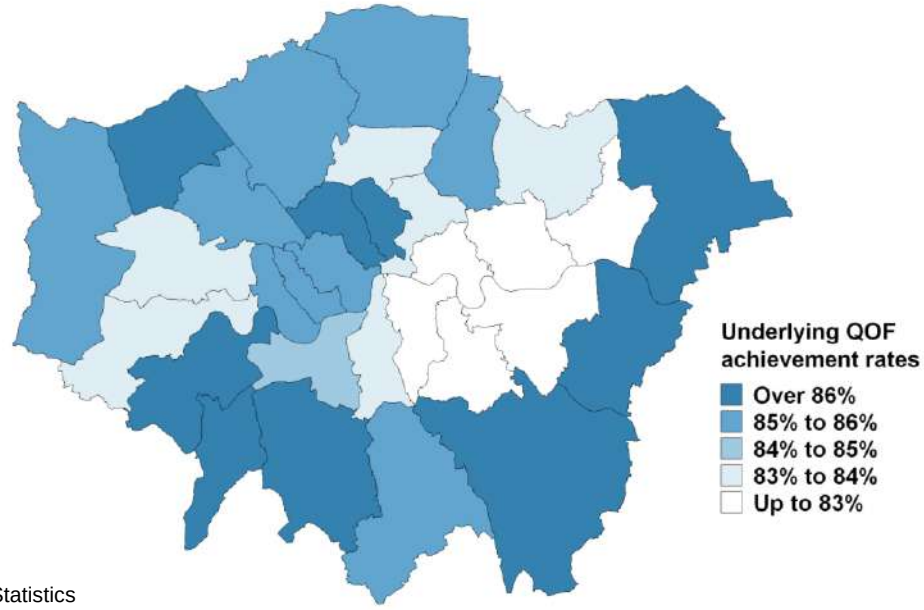
YHPHO
YORKSHIRE & HUMBER PUBLIC HEALTH OBSERVATORY

diabetes Health Intelligence
A STRATEGIC PROGRAMME WITHIN YHPHO

2009-10 QOF: percentage of diabetes 17+ register with HbA1c of less than 7%



2009-10 QOF: percentage of diabetes 17+ register with HbA1c of less than 9%



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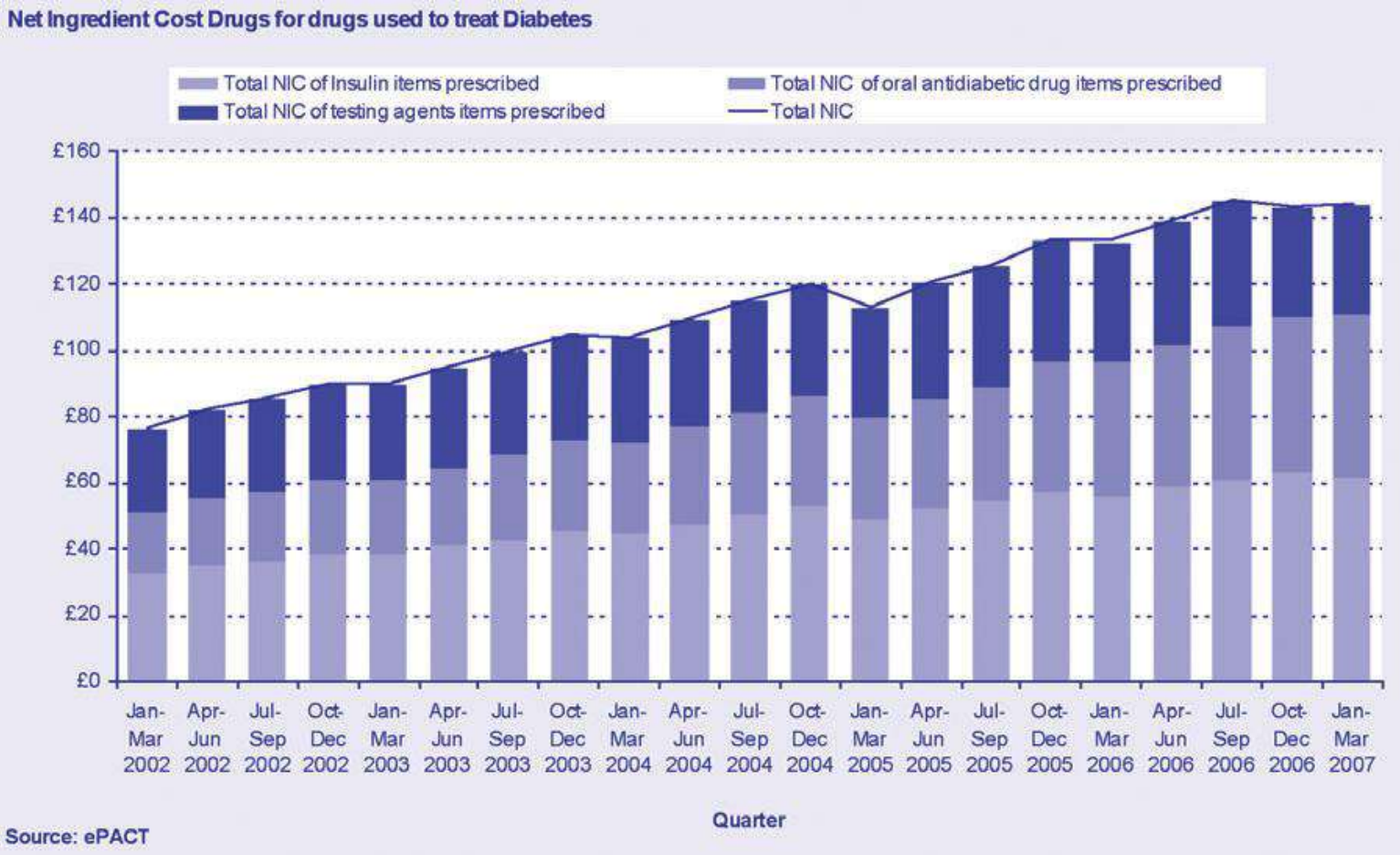
Costs of diabetes drugs in primary care



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Aims

To examine association between achievement of key clinical targets for HBA1c, blood pressure and diabetes control, and key clinical outcomes: mortality and emergency hospital admissions

Unlike most previous analyses, examine these associations using patient-level data rather than practice-level or area-level data

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Methods

Use data from the Clinical Practice Research Datalink (CPRD, formerly known as the General Practice Research Database, GPRD)

Derived from a sample of practice using the Vision EPR system

Linked to ONS mortality statistics and NHS Hospital Episode Statistics

Used records of a random sample of 125,000 people aged 17 and over with diabetes and 125,000 control patients

Assigned diabetes type (T1DM or T2DM) to each patient

Assigned information on smoking and comorbidities to each patient

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Measures of Quality of Care

DM06 (HbA1c ≤ 7.4% / 57.4 mmol/mol), DM12 (BP ≤ 145/85) and DM17 (TC ≤ 5.0 mmol/L).

National Diabetes Audit care processes (9 in total)

- HbA1c, BP, cholesterol, serum creatinine, urine albumin, foot surveillance, BMI, smoking status and retinopathy screening

Used quality of care data for 2005/06

Examined mortality and emergency hospital admissions in the index year and the subsequent four years (2006/07 to 2009/10)

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Statistical analysis

Univariate associations

Multivariate associations that adjusted for key confounding variables.

Examine quality of care measures separately and in combination

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Adjusted associations of patient factors with mortality

Diabetes Status	No DM	Reference Group	
	Prevalent DM	1.459	< 0.001
	Incident DM	1.003	0.835
Gender	Male	Reference Group	
	Female	0.853	< 0.001
Smoking Status	Non-smoker	Reference Group	
	Ex-Smoker	1.135	< 0.001
	Current Smoker	1.735	< 0.001
	Unknown	1.314	< 0.001
Age Group	< 25y	Reference Group	
	25 - 44y	2.912	< 0.001
	45 - 64y	10.45	< 0.001
	65 - 74y	31.745	< 0.001
	≥ 75y	105.815	< 0.001
IMD Fifth (1 = Most Deprived)	1	Reference Group	
	2	0.898	< 0.001
	3	0.85	< 0.001
	4	0.795	< 0.001
	5	0.729	< 0.001
Co-morbidity Grouping	CCI = 0	Reference Group	
	CCI = 1	1.084	< 0.001
	CCI = 2	2.001	< 0.001
	CCI = 3	2.402	< 0.001
	CCI ≥ 4	3.383	< 0.001

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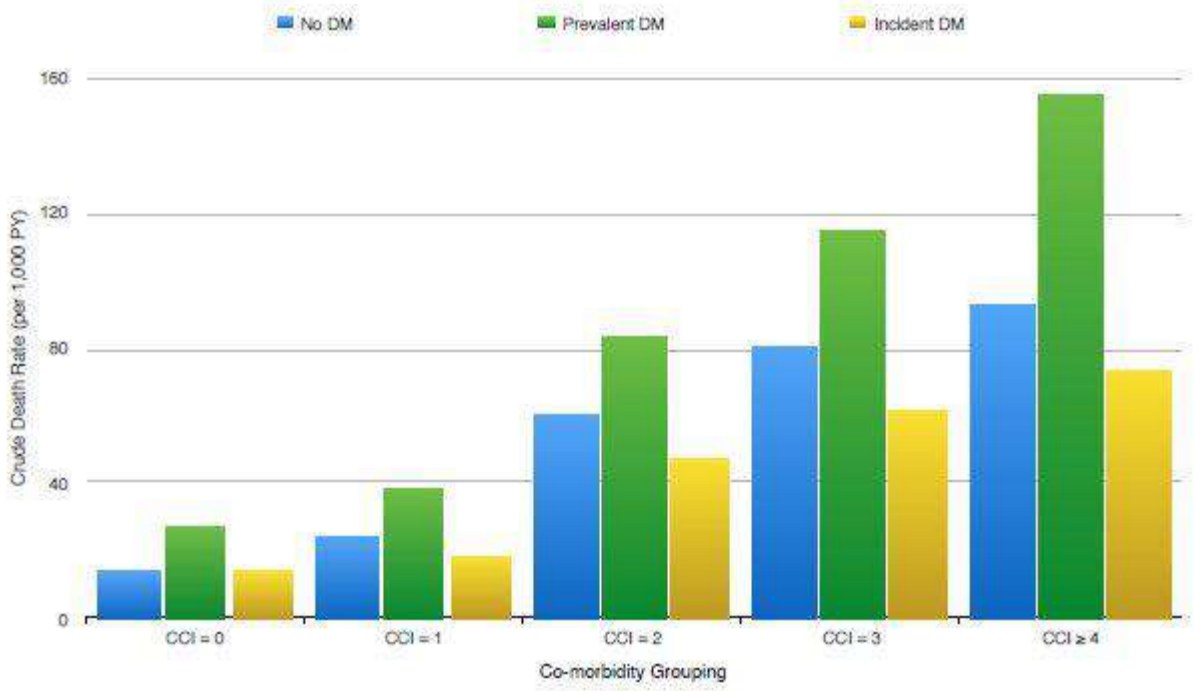
Death rates by diabetes status and comorbidity



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Adjusted associations of quality of care measures with mortality

	2005/06	2005-2010
HbA1c < 7.5%	0.55	0.80
BP ≤ 145/85	0.78	0.96
Total Cholesterol ≤ 5.0 mmol/L	0.34	0.67
HBA1c + Cholesterol	0.61	0.85
HBA1c + BP	0.47	0.77
Cholesterol + BP	0.49	0.79
All Three Targets	0.53	0.80

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Adjusted associations of quality of care measures with admission rates

	2005/06	2005-2010
HbA1c < 7.5%	0.82	0.83
BP ≤ 145/85	0.99	0.92
Total Cholesterol ≤ 5.0 mmol/L	0.77	0.85
HbA1c + BP	0.88	0.86
HBA1c + Cholesterol	0.80	0.84
Cholesterol + BP	0.87	0.89
All Three Targets	0.86	0.85

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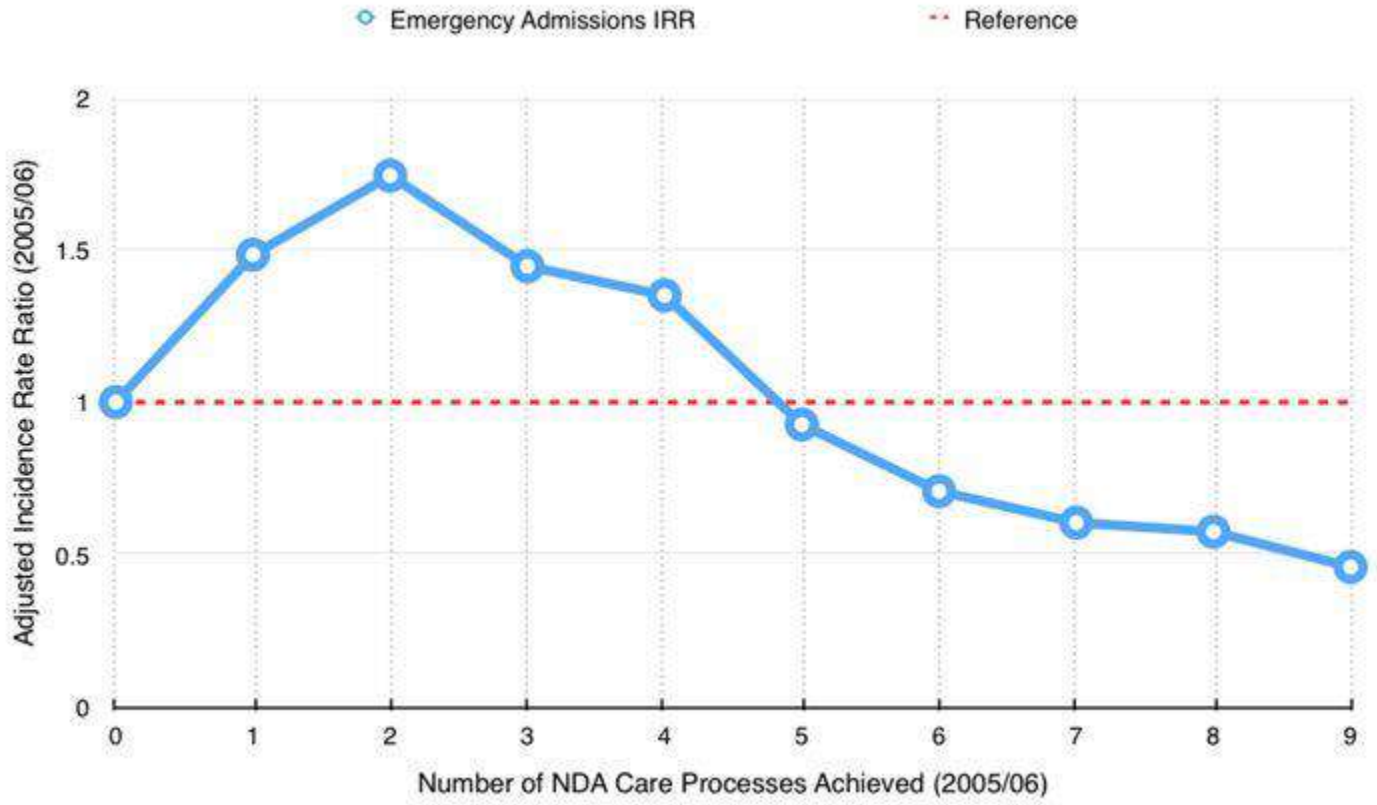
Other results

Higher number of 9 process measures completed associated with lower risk of mortality and emergency hospital admission.



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Discussion

Association between quality of patient care and outcomes such as mortality and hospital admission

Associations present both for control measures and process measures

Study provides evidence of benefits of the UK pay for performance scheme QOF on patient outcomes and use of NHS resources for people with diabetes

Positive message for GPs, practice nurses, diabetes specialist nurses and other members of the primary care team

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Limitations

Analysis still ongoing, so results not yet finalised

Need to look in more detail in interaction between control of HBA1c, blood pressure and cholesterol.

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