RBF in the UK: Quality and Outcomes Framework
Experiences from the English National Health Service

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Prioritisation happens at different levels

- UK parliament
  NHS vote every 2 years
  prioritise across defence, education, health, social care…

- Secretary of State for Health/Department of Health
  weighted capitation formula adjusted for age, need, geographical variation

- Primary Care Trusts
  NICE

- General Medical Services contract
  Quality Outcomes Framework, Fee For Service

- Hospitals
  block or activity contracts, Payment by Results, Best Practice Tariff, Commissioning for Quality Innovation

- GPs

- micro
  treatment decisions

- Doctor/patient interactions
The British Quality and Outcomes Framework (QOF)

• RBF for ‘advanced’ economy
• Relying on sophisticated IT systems (which were, however, one of the objectives for launching QOF and are still developing…)
• Strong institutional infrastructure – accountability and professional self-regulation

QOF overview

• The quality and outcomes (QOF) framework came into effect in 2004 as part of the new GP contract
• QOF is a voluntary programme for all GP surgeries. It is designed to resource and reward good practice in all GP surgeries
• It is estimated that QOF accounts for up to 15% of the average practice funding/income – approx. £1.1 billion pa
• QOF consists of 4 domains: clinical; organisational; patient experience; and added-services
• Clinical is the largest domain in terms of number of indicators and achievable points
QOF objectives

• Aim to embed preventive medicine and 'disease management' into primary care
• Also hoped to increase number of GPs, particularly in deprived/under-doctored areas
• Development has involved engagement of relevant professionals in expert led working groups
• Focus on process activities which GPs can have direct control (and which there is some evidence of subsequent benefits to patients)
• According to the National Audit Office (2008), average income of GPs increased by 34% in two years

QOF indicators

• In 2009/10 QOF measured achievement against 134 indicators
  – practices scored points on the basis of achievement against each indicator, up to a maximum of 1,000 points.
  – For 2009/10, practices were paid on average, £126.77 for each point they achieved
• Clinical care: the domain consists of 86 indicators across 20 clinical areas (e.g. coronary heart disease, heart failure, hypertension) worth up to a maximum of 697 points.
The 4 domains of the QOF

<table>
<thead>
<tr>
<th>Domain</th>
<th>Example indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>The percentage of patients with hypertension in whom there is a record of the blood pressure in the previous 9 months</td>
</tr>
<tr>
<td>Organisational</td>
<td>The practice meets with the primary care organisation prescribing advisor at least annually, has agreed up to 3 actions related to prescribing and subsequently provided evidence of change in prescribing rates</td>
</tr>
<tr>
<td>Patient experience</td>
<td>The % of patients who, in the national survey, indicate they were able to obtain a consultation within 2 working days.</td>
</tr>
<tr>
<td>Additional services</td>
<td>The % of patients aged from 25 to 64 whose notes record that a cervical smear has been performed in the last 5 years.</td>
</tr>
</tbody>
</table>

Selection of indicators (2004…)

- For indicators to be included in the QOF, the following should apply:
  - Responsibility for ongoing management of the patient rests primarily with GP and primary care team
  - There is good evidence of the health benefits likely to result from improved care
  - There are existing nationally accepted clinical guidelines
  - The disease is a priority across the UK
Points awarded per indicator

- The points awarded to each indicator are a function of:
  - The practice workload for delivering on the indicator
  - The potential for improved outcome for the patient from implementing each indicator

Data collection for indicators:

The principles agreed for the indicators are that:

- indicators should, where possible, be based on the best available evidence
- the number of indicators in each clinical condition should be kept to the minimum number compatible with an accurate assessment of patient care
- data should never be collected purely for audit purposes
- only data which are useful in patient care should be collected. The basis of the consultation should not be distorted by an over-emphasis on data collection. An appropriate balance has to be struck between excess data collection and inadequate sampling
- data should never be collected twice i.e. data required for audit purposes should be data routinely collected for patient care and obtained from existing practice clinical systems.

From: NHS Primary Care Commissioning, QOF Management Guide
Impact and evaluation of the QOF (1)

• Early evidence that the NHS quality and outcomes framework in primary care quickly reduced variation in practice activities…BUT
• QOF is costly: “The health outcomes may not have been sufficient to justify the substantial opportunity cost of the system.” (Bloor and Maynard, February 2010)…
• Stephen Martin and colleagues (University of York and Imperial College) found an association between achievement of QOF indicators and some (limited) measurable reduction in costs for hospital care and mortality outcomes (July 2010)
  – This association is stronger for some QOF indicators than others and particularly strong for stroke care

Impact and evaluation of the QOF (2)

• Doran et al 2011→Longitudinal analysis of achievement rates for 42 activities (428 identified indicators of quality of care)
  – “substantial improvements in quality” for all indicators between 2001 and 2007” (a resource rich ‘golden age’ for the NHS?)
  – BUT…Quality of primary care was generally improving in England in the early 2000s → introduction of an incentive scheme seemed to accelerate this trend for incentivised activities, but quality quickly reached a plateau; some detrimental effects on non incentivised activities in the longer term
Also…

![Clinical performance graph showing performance leveling off over time.](image)

Source: Campbell SM et al; National Primary Care Research and Development Centre

In 2009, Ministers ask NICE to:

- Develop **new and review/retire** existing indicators
- Focus on health outcomes and underpinning **evidence** base, including burden of disease
- Ensure indicator activity and accompanying monetary incentive are **cost-effective**
- Offer **procedurally fair**, transparent and effective engagement platform for key stakeholders
- Ensure GP practices and local NHS have **greater flexibility** to select quality indicators from a national menu, reflecting local health priorities
- **Reduce number of organisational and process indicators** to target more resources on health outcomes and quality improvement
The NICE criteria for selecting indicators (2009 onwards)

Criterion 1: relevance to primary medical care

- the prevalence of the condition
- whether it is managed in primary care, in relation to case finding, diagnosis, referral or management
- whether care is delivered by primary care medical practitioners or directly employed staff (for example, practice nurses) or by allied health professionals not covered by the QOF (for example, midwives, health visitors).

All three need to apply. If any are absent the topic cannot progress.

Criterion 2: disease severity

- In primary care the focus is more on morbidity, disability and quality of life (QOL), rather than mortality.
- This criterion should take into account life expectancy, state of health before and after treatment, how far the individual is away from perfect health, and health states that incur social stigma.
The NICE criteria for selecting indicators

Criterion 3: healthcare priority area and timeliness
• Both aspects (healthcare priority area and timeliness) will be considered together.

Criterion 4: health inequalities
• An assessment will be made as to how likely the topic being reviewed is to reduce health inequalities.

Criterion 5: clinical effectiveness (evidence)
• An assessment will be made of the impact of the recommendations on the strength of the underlying evidence.

Criterion 6: clinical effectiveness (health outcomes)
• An assessment will be made of the impact of the recommendations on health outcomes (mortality, morbidity, disability and quality of life).

Criterion 7: healthcare delivery
• This criterion assesses the extent to which the recommendations would result in a shift in practice and to what extent they would lead to cost-effective delivery of care. This criterion will need to take account of the extent to which the recommendations are currently part of current clinical practice.

Criterion 8: feasibility
• This criterion assesses the likely technical feasibility of the recommendation working in practice. This criterion must be fully met for the topic to progress.
Criteria for retiring indicators

- High reported achievement
  - High average levels
  - Low variation
  - Historical trends levelling off
- Low exception reporting

<table>
<thead>
<tr>
<th>Indicator (measurement)</th>
<th>Median (Interquartile range) achievement (%)</th>
<th>Median (Interquartile range) rate of exceptions (%)</th>
<th>Paired indicator?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure</td>
<td>98.3 (96.7-99.3)</td>
<td>98.1 (97.2-99.3)</td>
<td>96.4 (94.9-98.0)</td>
</tr>
<tr>
<td>Haemoglobin A1c</td>
<td>97.4 (95.1-98.8)</td>
<td>97.8 (95.5-99.0)</td>
<td>97.7 (96.0-98.3)</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>98.5 (97.4-99.6)</td>
<td>99.0 (98.0-100)</td>
<td>98.9 (97.9-99.3)</td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>96.7 (94.1-98.3)</td>
<td>97.4 (95.5-98.7)</td>
<td>97.4 (96.9-98.7)</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>96.6 (97.8-98.7)</td>
<td>95.4 (94.6-98.5)</td>
<td>94.8 (94.3-98.0)</td>
</tr>
<tr>
<td>Serum creatinine and thyroid stimulating hormone</td>
<td>100 (100-100)</td>
<td>100 (100-100)</td>
<td>100 (100-100)</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>87.4 (95.1-98.6)</td>
<td>97.7 (96.6-98.1)</td>
<td>97.6 (95.9-99.3)</td>
</tr>
<tr>
<td>Thyroid function</td>
<td>Hypothyroidism</td>
<td>96.8 (94.5-98.7)</td>
<td>96.7 (94.5-98.1)</td>
</tr>
</tbody>
</table>


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And then what… adverse impact?

- No empirical evidence from UK. To minimise impact consider:
  - Gradual reduction of the payments
  - Initial removal of half of paired indicators (remove process but keep linked intermediate outcome indicator)
- Continue monitoring removed indicators (GP Extraction Service)
### QOF process

<table>
<thead>
<tr>
<th>NICE Managed (NPCRDC /YHEC)</th>
<th>24 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collation of clinical and cost information</td>
<td></td>
</tr>
<tr>
<td>Prioritisation of evidence-based recommendations</td>
<td></td>
</tr>
<tr>
<td>Indicator development, pilot process and consultation</td>
<td></td>
</tr>
<tr>
<td>Validation and publication</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DH, GPC and NHS employers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes to QOF indicators negotiated using the NICE menu</td>
<td></td>
</tr>
</tbody>
</table>

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**Selecting the indicators: a public debate**

- **PharmaTimes Online**
  - Osteoporosis in QOF, 27 June
  - Anger at NICE plans to drop QOF depression indicators

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Negotiating…

“The final list of indicators to be included in the 2012-13 QOF will be decided by NHS Employers (NHSE), on behalf of the UK health departments, and the General Practitioners Committee (GPC) of the British Medical Association (BMA).” NICE, 2011

Dozens of indicators will be scrapped including those that NICE has identified as part of routine GP care. Instead GPs will be incentivised through ‘quality and productivity indicators’ that aim to reduce referrals to secondary care and create efficiency savings through more effective prescribing.
• Less logistical support/management
• Nationally run
• Access to national queries
• Audit facilitation
• Support for research
• Public health surveillance function
• Incorporation of NICE standards
• Monitoring of non-active QOF indicators
• Coming in 2012/2013

General Practice Extraction Service (GPES)

QOF: working towards the £20bn savings target…

• The eleven quality and productivity (QP) indicators have been agreed for 2011/12 only.
• They are aimed at securing a more effective use of NHS resources through improvements in the quality of primary care by:
  – rewarding more clinically and cost-effective prescribing,
  – reducing emergency admissions by providing care to patients through the use of alternative care pathways
  – reducing hospital outpatient referrals.
• Practices are expected to use prescribing comparator data across England to benchmark their performance
Cost-effective prescribing

• £323m pa (2009 baseline) from cost-effective prescribing of lipid modifying drugs (National Audit Office)
• Based on extensive evidence of effectiveness and cost-effectiveness, NICE recommends statins “for primary prevention of cardiovascular disease (CVD) for adults who have a 20% or greater 10-year risk of developing CVD.”
• NICE recommends that “therapy should usually be initiated with a drug of low acquisition cost.”

Efficient prescribing

• NICE guidance to use generic statins, PPIs, anticoagulants and antihypertensives – over £440m savings pa (National Audit Office)
Are monetary incentives cost-effective?

1. Is the activity/intervention described by the indicator cost effective?
2. What is the current baseline?
3. What level of payment is economically justifiable to increase the activity?

Net benefit = Monetised benefit - Delivery cost - QOF payment

- **Monetised benefit** = expected QALY gain
- **Delivery costs** = all NHS and social care costs estimated to arise from increase in uptake
- **QOF payment** = additional to delivery cost as an incentive to increase best practice

Quality Adjusted Live Years gained or lost because of intervention, based on clinical trials and modelling
Monetised benefit

- Generic measure of health outcome: Quality Adjusted Life Year: 1 year in full health
- NICE threshold range (or willingness to pay for 1 QALY): £20,000-£30,000 (£25,000)
- Monetised benefit = Number of QALYs x threshold

Methodology – worked example

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered population</td>
<td>49.3 million</td>
</tr>
<tr>
<td>Prevalence 0.1%</td>
<td>49,300</td>
</tr>
<tr>
<td>Current achievement</td>
<td>35%</td>
</tr>
<tr>
<td>Maximum achievement</td>
<td>70%</td>
</tr>
<tr>
<td>Delivery cost per patient</td>
<td>£1,500</td>
</tr>
<tr>
<td>Total additional delivery cost</td>
<td>£26 million</td>
</tr>
<tr>
<td>Incremental effect</td>
<td>0.10 QALY</td>
</tr>
<tr>
<td>Total monetised benefit</td>
<td>£2,500</td>
</tr>
<tr>
<td>QOF Incentive 5 points</td>
<td>£5 million</td>
</tr>
<tr>
<td>Net benefit</td>
<td>£12 million</td>
</tr>
</tbody>
</table>
Net Benefit will increase for:

- Lower incremental cost of intervention per patient
- Higher incremental health benefit of intervention per patient
- Lower baseline achievement (as payment is allocated across all eligible patients)
- Higher % eligible population (practice prevalence)
- Higher practice size
QOF may be different to RBF in LMICs

• It is not meant to subsidise the provision of core services
• It is not meant to support practice’s cashflow
• *But* has a number of implicit objectives:
  – GP buy-in
  – IT infrastructure across 1º care
  – Collection of information on performance

Requires strong institutional capacity

- **Institutional home:** process, methods and quality assurance
- **Informational capacity:** rigorous collection and analysis
- **Payer-driven**
- **Professional buy-in**
- **Long-term political support**
- **Independent high-quality academic support**
Introducing a new indicator

Indicator area: Secondary prevention of coronary heart disease (myocardial infarction)

Indicator ID: NM07

The percentage of patients with a history of myocardial infarction from 1 April 2011 currently treated with an ACE inhibitor (or ARB if ACE intolerant), aspirin or an alternative anti-platelet therapy, beta-blocker and statin (unless a contraindication or side effects are recorded)

The development of a NICE indicator: secondary prevention of MI

- Ambulatory setting; evidence of clinical and cost effectiveness; UK burden of disease; national policy priority
- Currently not incentivised

- NICE Clinical Guideline CG48 (2007); patients following acute MI should be offered combination treatment with aspirin, ACE-inhibitor, b-blocker and statin

- Incremental cost: £514; incremental benefit: 0.049 QALYs; CPO: £10,816
- Baseline achievement: 11.3%; prevalence: 0.75%
- Cost-effective indicator even for double cost of delivery (sensitivity analysis)

- Weighted annual cost of all four combinations: £195.6 per year per patient
- Current cost: £9.2m; estimated cost: £9.5-11.3m; net cost impact: £0.3-2.1m pa;
- Potential savings: acute MI: £3,500 (uncomplicated); cardiac ICU: £1,045 per day

- The % of patients with a history of MI (from April 2011) currently treated with an ACE inhibitor (or ARB, if intolerant), aspirin, b-blocker and statin (unless recorded contraindication or side-effects).
Results for all (patients, GPs, payers, government) to see...

Types of indicator

<table>
<thead>
<tr>
<th>Percentage of patients from register</th>
<th>Structure</th>
<th>Outcome (proxy)</th>
<th>Process</th>
<th>Structure</th>
<th>Outcome (proxy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The percentage of patients with diabetes who have a record of the blood pressure in the previous 15 months</td>
<td></td>
<td></td>
<td></td>
<td>97.2%</td>
<td></td>
</tr>
<tr>
<td>The percentage of patients with diabetes in whom the last blood pressure is 145/85 or less</td>
<td></td>
<td></td>
<td></td>
<td>79.5%</td>
<td></td>
</tr>
<tr>
<td>The percentage of patients with diabetes with proteinuria or microalbuminuria who are treated with ACE inhibitors (or A2 antagonists)</td>
<td></td>
<td></td>
<td></td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>The percentage of patients with diabetes who have a record of retinal screening in the previous 15 months</td>
<td></td>
<td></td>
<td></td>
<td>81.3%</td>
<td></td>
</tr>
<tr>
<td>The percentage of patients with diabetes in whom the last HbA1c is 7 or less (or equivalent test reference range depending on local laboratory) in the previous 15 months</td>
<td></td>
<td></td>
<td></td>
<td>85.4%</td>
<td></td>
</tr>
</tbody>
</table>
### Adjusting by prevalence and practice size

**CLINICAL PREVALENCE:**

<table>
<thead>
<tr>
<th>Percentage of practice list size</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevalence in England: 5.4%</td>
<td></td>
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<tr>
<td>St John Wood practice size: patients</td>
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<tr>
<td>Average practice size in England: 11,010 patients</td>
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</table>

Adjust number of points by: prevalence (3.11/5.4) and practice size (x/11,010)

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### Exception reporting and gaming

“...to allow practices to pursue the quality improvement agenda and not be penalised, where, for example, patients do not attend for review, or where a medication cannot be prescribed due to a contraindication or side-effect.” 2003 Contract

- 5-6% across England...but is it necessary?
  - **Yes:** to avoid penalising practices and encourage honest reporting; to allow clinical flexibility
  - **No:** top payment threshold less than 100%; recorded variation over statistical tolerance; highest recorded exception rates linked to outcomes and interventions (lowest for structural metrics); increase in performance correlates with concurrent increase in exception rates; most deprived areas only 0.67% higher exception rates than least deprived
The following criteria have been agreed for exception reporting:

A. patients who have been recorded as refusing to attend review who have been invited on at least three occasions during the preceding twelve months
B. patients for whom it is not appropriate to review the chronic disease parameters due to particular circumstances e.g. terminal illness, extreme frailty
C. patients newly diagnosed within the practice or who have recently registered with the practice, who should have measurements made within three months and delivery of clinical standards within nine months e.g. blood pressure or cholesterol measurements within target levels
D. patients who are on maximum tolerated doses of medication whose levels remain sub-optimal
E. patients for whom prescribing a medication is not clinically appropriate e.g. those who have an allergy, another contraindication or have experienced an adverse reaction
F. where a patient has not tolerated medication
G. where a patient does not agree to investigation or treatment (informed dissent), and this has been recorded in their medical records
H. where the patient has a supervening condition which makes treatment of their condition inappropriate e.g. cholesterol reduction where the patient has liver disease
I. where an investigative service or secondary care service is unavailable

Verifying QOF results…

1. QOF annual assessment/review
2. Prepayment verification (PPV)
3. Random 5% checks (post payment verification)

The GMS contract guidance in 2003-4 stated

...The practice quality review will be founded on the development of a relationship between the practice and the PCO based on the principles of high trust, evidence base, appropriate progression and development within the practice context, minimising bureaucracy, and ensuring compliance with the statutory responsibilities of the PCO. The PCO’s role will be given appropriate underpinning in legislation.
QOF annual review process

• The annual QOF review process aims to:
  – Review the contractor’s current achievement and provide PCTs with assessment of likely achievement by 31 March each year
  – Confirm data collection and quality (and therefore payments based on the data) are accurate
  – Discuss contractor’s aspiration for next year
• Primary care organisations may opt for less frequent visits…

Prepayment verification (PPV)

• Inexplicably low or high numbers of patients on disease registers given PCT average prevalence or outlier for exception reporting
• PCT evidence of inappropriate and systematic referral to secondary care to maximise points
• Unexplained variation between aspiration and achievement
• Suspected fraud or illegality
Random 5% checks

- **As per PPV**
- Post-payment verification mechanism
- Random 5% of contractors undergo thorough check as part of anti-fraud measures
  - Substantial discrepancies between the QOF Annual review report and the achievement claim submitted
  - High or low prevalence rates compared to PCT or National averages that cannot be explained by the related Practice demographics
  - High or low rates of exception reporting
  - Any sudden large changes in figures, particularly from one month to the next
- Checks may require a visit; these should be independent of annual QOF review visit

Offering feedback: QMAS

- The Quality Management and Analysis System, known as QMAS, is a national IT system which gives GP practices and Primary Care Trusts (PCTs) objective evidence and feedback on the quality of care delivered to patients.
- QMAS shows how well each practice is doing, measured against national QOF achievement targets. It allows practices to analyse the data they collect about the number of services and the quality of care they deliver, such as the services provided to patients with the chronic diseases that are included in the QOF. Access to the system is also provided to PCTs so that practices and PCTs can share information on achievement throughout the year.
Constant calibration between current and forecast

Process matters

“Quality Standards are not policy statements, nor produced by the Government. The potential power of quality standards to drive improvement stems from the collaborative, evidence-based process that NICE uses to develop them.”