

NHS Tower Hamlets

Cost Effectiveness Review: Summary document

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Aim

This review aimed to assess the cost effectiveness of a number of primary and secondary prevention interventions.

Purpose

During the current period of transitions and changes to accountability for commissioning services, it is important that long-term cost-effective interventions are protected. This review aims to provide the evidence base for future commissioners to base their decisions on.

This is in-line with the following core public health functions:

- Health economics modelling of interventions
- Evidence base for health interventions
- Development of preventative (primary and secondary) health care services

In the current climate, the commissioning responsibility for each preventative intervention is undetermined. However, it is clear that both future GP consortia and the local authority will have an interest in their outcomes. This review aims to quantify this in the interests of both parties.

Scope

The review is limited to primary and secondary prevention (in as much as risk factors are prevented, managed and the early detection of conditions). Interventions that address conditions once diagnosed were considered outside the scope of this review.

The following interventions were assessed under the first part of this review:

- Atrial fibrillation pulse checks
- Cancer early diagnosis
- COPD: Alpha-1-Antitripsin Deficiency testing
- COPD Spirometry
- Exercise on referral
- Familial hypercholesterolaemia
- Gestational diabetes
- Haemoglobinopathies
- Health Trainers
- Healthy Start vitamins
- NHS Health Checks
- Patient education

The following interventions are under consideration for the next stage:

- Adult weight management services / obesity pathway
- Child weight management
- Smoking cessation
- Sexual health preventive interventions

- Dementia
- Aspire programme for teenage pregnancy
- Family support for teenage pregnancy
- Chlamydia screening
- Healthy Schools Programme
- Access to Healthy Food Programme
- Healthy Families
- Front-line staff training in brief interventions
- Oral health promotion

The findings are summarised below. Further detail is available for these calculations and will be included in the main report.

Actions:

The Polysystem PMO is requested to:

- 1) Review the summary findings
- 2) Indicate which boards in CSS need to receive this report to influence NHS commissioning
- 3) Suggest additional interventions for future modelling work

Atrial fibrillation pulse checks

1 Intervention description, volume and outcomes

Atrial fibrillation is considered to be underdiagnosed by 50%, and is a growing problem. It is a significant problem as people with atrial fibrillation are at increased risk of a severe stroke. Opportunist pulse checks in primary care for the over 65 population picks up irregular pulses in 10% of the population. These people would require onward referral for an ECG, 8% of which are likely to have a confirmed diagnosis of AF (132 patients in Tower Hamlets) who are then prescribed warfarin.

2 How much does the intervention cost per year?

ECGs + warfarin + anticoagulation clinic appointments = **£105,644**

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

16 potential strokes could be prevented per year, of which 6 would have resulted in death (this has not been modelled for accumulated risk over longer periods of time).

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Total saving in health care costs = £159,000. This cannot be considered to be an annual cost saving as the morbidity and mortality savings have only been modelled for one year.

5 What is the total pathway reduction in spend annually and over 5 years?

After one year, the total spend is £53,345. This is a conservative estimate. Were this to be refined then the reduction in spend would increase. Savings will continue but spend will reduce. However, these are avoided costs rather than real savings.

6 What is the impact of the intervention on health inequalities?

Likely to reduce health inequalities in deprivation and gender.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Increase in economically active population and decreased burden on carers and social care interventions.

8 What is the cost effectiveness case for scale of delivery?

Pulse checks by locality. ECGs at borough or sector level.

9 Confidence in evidence

RCT, supported by grey literature and government guidelines.

10 Headline findings

| | |
|---------------------------------|-----------|
| Cost savings (NHS demand) | 2 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 1 (1-5) |
| Impact on inequalities | 2 (1-5) |
| Wider socio-economic value | 3 (1-5) |
| Confidence in evidence | 1b (1a-4) |

Cancer early diagnosis

1 Intervention description, volume and outcomes

GP endorsement of screening and local call-recall; Flexible times and clinics for screening; Targeted health promotion using social marketing segmentation and outreach e.g. phone calls; text messaging; bilingual advocacy; peer messaging

2 How much does the intervention cost per year?

£70,000 recurrent annual budget for awareness and early detection campaign.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

29 avoidable deaths each year as a result of late presentation of common cancers.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Increasing earlier diagnosis of the commonest cancers would not result in a reduction of financial costs to the NHS. Cost per year of the following tumour groups: lung £14,256; breast £13,974; colorectal £37,446.

5 What is the total pathway reduction in spend annually and over 5 years?

Over 5 years, the additional costs to the NHS of averting up to 90 deaths from common cancers will be £328,380

6 What is the impact of the intervention on health inequalities?

Likely to reduce health inequalities in deprivation and gender.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Increase in economically active population and decreased burden on carers and social care interventions.

8 What is the cost effectiveness case for scale of delivery?

Already operating at sector level

9 Confidence in evidence

Government guidelines, supported by meta data.

10 Headline findings

| | |
|---------------------------------|-----------|
| Cost savings (NHS demand) | 4 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 1 (1-5) |
| Impact on inequalities | 1 (1-5) |
| Wider socio-economic value | 3 (1-5) |
| Confidence in evidence | 1b (1a-4) |

COPD: Alpha-1-Antitripsin Deficiency testing

1 Intervention description, volume and outcomes

Alpha-1 antitrypsin (AAT) deficiency is an uncommon cause of COPD, accounting for around 2% of cases of COPD, with an underlying prevalence of 10% in the COPD population. NICE guidelines recommend testing if a patient has early onset COPD (under 40 years), minimal smoking or a family history. The review assesses detection and smoking cessation in the 2,872 COPD population.

2 How much does the intervention cost per year?

£22,976(tests in all COPD) + 11,480(further tests in 10%) + 17,664(smoking cessation in 32%) = £52,120. This is an over-ascertainment as not all will require this.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

The long-run (5 year) smoking quit rate for smokers with COPD is estimated to be 17%. This would mean 16 patients would be long-term quitters. The discounted quality-adjusted life years (QALYs) gained per lifetime quitter is estimated at 3.59.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

The benefit-to-cost ratio for the smoking cessation service is approximately 5:1.

5 What is the total pathway reduction in spend annually and over 5 years?

As the NICE definition for COPD has changed recently, there might be a sudden increase in the incidence of COPD in the borough over the next few years as this definition takes hold. The reduction in spend would therefore be less than if the incidence of new diagnoses were to remain at historical levels.

6 What is the impact of the intervention on health inequalities?

Likely to reduce health inequalities in deprivation.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Improved functional status, mobility, later mortality, reduction in disability benefits paid out and fewer years of unemployment due to severe disease.

8 What is the cost effectiveness case for scale of delivery?

Borough-level economies of scale.

9 Confidence in evidence

Several RCTs and NICE guidance.

10 Headline findings

| | |
|---------------------------------|----------|
| Cost savings (NHS demand) | 1 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 3 (1-5) |
| Impact on inequalities | 1(1-5) |
| Wider socio-economic value | 2 (1-5) |
| Confidence in evidence | 1b (1-5) |

COPD Spirometry

1 Intervention description, volume and outcomes

According to the latest NICE guidelines, the presence of airflow obstruction (for COPD diagnosis) should be confirmed by performing post-bronchodilator spirometry. Spirometry should also be performed in patients who are over 35, current or ex-smokers, and have a chronic cough. Spirometry should be considered in patients with chronic bronchitis.

2 How much does the intervention cost per year?

The undiagnosed COPD population is estimated to be 12,128. Assuming all are suspected mild, this is $£12,128 \times 163 = £1,552,384$.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

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4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

The benefit-to-cost ratio for the smoking cessation service is approximately 5:1.

5 What is the total pathway reduction in spend annually and over 5 years?

As the NICE definition for COPD has changed recently, there might be a sudden increase in the incidence of COPD in the borough over the next few years as this definition takes hold. The reduction in spend would therefore be less than if the incidence of new diagnoses were to remain at historical levels.

6 What is the impact of the intervention on health inequalities?

Possible inverse care law as more deprived less likely to take up intervention.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Improved functional status, mobility, later mortality, reduction in disability benefits paid out and fewer years of unemployment due to severe disease.

8 What is the cost effectiveness case for scale of delivery?

Borough-level economies of scale.

9 Confidence in evidence

Several RCTs and NICE guidance.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 2 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 2 (1-5) |
| Impact on inequalities | 2 (1-5) |
| Wider socio-economic value | 3 (1-5) |
| Confidence in evidence | 1b |

Exercise on referral

1 Intervention description, volume and outcomes

In order to be eligible an individual should be over 19 years old and have one or more of Diabetes, Hypertension, Hypercholesterolemia (>5.5), BMI >25, depression or anxiety. In addition they will be 'inactive' or 'moderately inactive' as measured by the General Practice Physical Activity Questionnaire (GPPAQ). The intervention consists of each participant receiving up to 3 1:1 structured training sessions leading up to the Level 2 Bikeability qualification. 400 people referred annually.

2 How much does the intervention cost per year?

Cost per year = £43,000. Cost per patient = £215

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

1 life saved each three years.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Present value of Mean Annual Benefit: £ 228,663.22

5 What is the total pathway reduction in spend annually and over 5 years?

Savings calculated in terms of utility, rather than cash savings realised by the NHS. NHS spends £43K per year.

6 What is the impact of the intervention on health inequalities?

Supported exercise expected to benefit those most uncomfortable exercising alone, particularly women and BME groups.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Multiple adverse effects of climate change on health.

8 What is the cost effectiveness case for scale of delivery?

Borough-level most appropriate, to avoid multiplicity of providers.

9 Confidence in evidence

Retrospective cohort and cross-sectional studies.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 2 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 4 (1-5) |
| Impact on inequalities | 2 (1-5) |
| Wider socio-economic value | 5 (1-5) |
| Confidence in evidence | 2a |

Familial hypercholesterolaemia

1 Intervention description, volume and outcomes

FH is a genetic condition characterised by high levels of cholesterol circulating in the blood. There are expected to be 450 cases in Tower Hamlets, of which approximately 70 are diagnosed. People with a family member with FH, a first-degree family member who has had a MI under 60 years, or second-degree relative with an MI under 50 years are recommended for DNA testing, and statin treatment.

2 How much does the intervention cost per year?

Year 1: £34,619; Year 2: £48,973; Year 3: £55,844

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

1 MI avoided in three years. However, this will have a cumulative effect over a longer time period.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Negligible until year 3: £7,155 based on one MI avoided

5 What is the total pathway reduction in spend annually and over 5 years?

Over the three year period described this required an overall investment of £132,381. However, the savings are a conservative estimate and it is assumed that these will increase after the three year time period described.

6 What is the impact of the intervention on health inequalities?

This would improve inequalities for Tower Hamlets relative to national MI rates.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

This would increase the healthy life expectancy local, and decrease burden on carers.

8 What is the cost effectiveness case for scale of delivery?

It is recommended that DNA testing is commissioned at a sector level due to low numbers.

9 Confidence in evidence

This is based on NICE guidance, which involved a systematic review.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 4(1-5) |
| Benefits saved (QALY/DALY/etc.) | 3(1-5) |
| Impact on inequalities | 3(1-5) |
| Wider socio-economic value | 4 (1-5) |
| Confidence in evidence | 1a |

Gestational diabetes

1 Intervention description, volume and outcomes

Gestational diabetes mellitus is associated with a number of adverse foetal and maternal outcomes and therefore early detection and management is likely to offer benefits to mother and baby both during and after pregnancy. There were 4,255 births to women resident in Tower Hamlets in 2008/9 – all of whom should have random blood glucose test on referral and at 28 weeks.

2 How much does the intervention cost per year?

Universal OGTT testing for antenatal screening most cost-effective. Post-natal GTT testing costs £4000 annually.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

Treatment has been found however to reduce the risks of foetal overgrowth, shoulder dystocia, caesarean delivery, and hypertensive disorders. Screening and treatment of GDM also has long term implications for preventing associated morbidity and mortality.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

The incremental cost per life-year gained is \$2,988. A multidisciplinary antenatal service for women with diagnosed GDM is already available.

5 What is the total pathway reduction in spend annually and over 5 years?

Local data not yet accessed and analysed. Needs assessment in progress which will help identify the current spend.

6 What is the impact of the intervention on health inequalities?

This will address inequalities in BME groups and more deprived areas.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Reduction in obesity, disability and unemployment.

8 What is the cost effectiveness case for scale of delivery?

Screening based on individual risk is potentially more sophisticated and cost-effective; a Borough level programme could be tailored to the local population.

9 Confidence in evidence

This is based on NICE guidance, which involved a systematic review and supported by RCTs.

10 Headline findings

| | |
|---------------------------------|--------|
| Cost savings (NHS demand) | 3(1-5) |
| Benefits saved (QALY/DALY/etc.) | 2(1-5) |
| Impact on inequalities | 2(1-5) |
| Wider socio-economic value | 3(1-5) |
| Confidence in evidence | 1a |

Haemoglobinopathies

1 Intervention description, volume and outcomes

Screening, counselling and support for patients at risk of thalassaemia or sickle cell.

2 How much does the intervention cost per year?

The current SLA with City and Hackney Thalassaemia centre is £73 786.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

It is hard to estimate with accuracy the impact on morbidity and mortality without further detailed study of those diagnosed through screening as opposed to people diagnosed at a later stage – there is a lack of research in this area.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

As above

5 What is the total pathway reduction in spend annually and over 5 years?

As above

6 What is the impact of the intervention on health inequalities?

This will address inequalities in BME groups

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Reduced staff absence and reliance on social services.

8 What is the cost effectiveness case for scale of delivery?

A sector-level service may benefit from economies of scale, provided community engagement retained.

9 Confidence in evidence

Little evidence to support outcomes in this field.

10 Headline findings

| | |
|---------------------------------|--------|
| Cost savings (NHS demand) | 4(1-5) |
| Benefits saved (QALY/DALY/etc.) | 4(1-5) |
| Impact on inequalities | 1(1-5) |
| Wider socio-economic value | 3(1-5) |
| Confidence in evidence | 4 |

Health Trainers

1 Intervention description, volume and outcomes

Health Trainers use techniques based on psychological evidence and theories to help people change behaviours that are known to cause ill-health. They offer a three-tier service: signposting, lifestyle advice session, 1:1 interventions, and the annual target for uptake is respectively 9600, 4800 and 1600 people.

2 How much does the intervention cost per year?

The current level of funding is **£800,000 per year**. This is the cost of the commissioned service and excludes costs incurred by the PCT in commissioning the programme.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

The programme as currently configured will realise a total annual health gain of 111.2 DALYs.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

At the current level of investment (£800,000 per year) the Tower Hamlets Health Trainer programme will realise **cost-savings to the NHS of £665,113** and therefore incurs an overall net-cost to the NHS of **£134,886**. Factoring in cost-savings to the local authority gives **overall public sector cost-savings of £751,782** and reduces the overall net-cost of the programme to the public sector of **£48,217**.

5 What is the total pathway reduction in spend annually and over 5 years?

An equity-weighted cost per DALY of £302.20 per DALY.

6 What is the impact of the intervention on health inequalities?

The programme has been shown to be successfully in targeting the most deprived groups.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Well-being and self-efficacy, active communities, educational and employment prospects for volunteers

8 What is the cost effectiveness case for scale of delivery?

Localities in order to target communities appropriately.

9 Confidence in evidence

Service evaluation and literature reviews, but no long-term follow-up studies.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 2 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 3 (1-5) |
| Impact on inequalities | 4 (1-5) |
| Wider socio-economic value | 4 (1-5) |
| Confidence in evidence | 2a |

Healthy Start vitamins

1 Intervention description, volume and outcomes

Guidelines suggest dietary supplementation for higher risk groups (pregnant / breastfeeding women, children aged 6 months to 4 years old, people with low sun exposure, 65yrs+ age groups) to prevent Vitamin D deficiency.

2 How much does the intervention cost per year?

There are alternative models to meet this need. For all pregnant women the cost would be £20,412. For all eligible children the cost would be £403,109.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

54% of people with vitamin D deficiency are estimated to be future CVD cases, at a ten year projection.

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Children admitted for vitamin D deficiency *Estimated cost = £57 000*. Children admitted for unspecified vitamin D deficiency *Estimated cost based on admission events = £69,157*.

Women admitted for unspecified vitamin D deficiency *Estimated cost based on admission events = £393,675*. Women admitted for adult osteomalacia *Estimated cost based on admission events = £28,879*

5 What is the total pathway reduction in spend annually and over 5 years?

The net cost saving/QALY is £618 based on CVD alone.

6 What is the impact of the intervention on health inequalities?

This will target more deprived populations.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Increased economically active population and reduce burden of chronic disease.

8 What is the cost effectiveness case for scale of delivery?

Recommended at borough level.

9 Confidence in evidence

Based on NICE guidance, following systematic review.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 2 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 3 (1-5) |
| Impact on inequalities | 3 (1-5) |
| Wider socio-economic value | 2 (1-5) |
| Confidence in evidence | 1a |

NHS Health Checks

1 Intervention description, volume and outcomes

Patients aged 40-74 years who are not on a CVD or diabetes register, nor are prescribed statins already, are invited to attend an appointment in order of their predicted QRISK score (based on data already held in their GP records). Currently 45,218 people are estimated to be eligible.

2 How much does the intervention cost per year?

Total annual cost: £614,607.67 assuming 100% implementation.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

The PHAST model predicts that this intervention will save 1 life per year. It will further prevent 7.4 admissions to hospital per year. Cost per QALY is £3,098.78

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

Models estimate that this intervention will save £49,105.29 per year.

5 What is the total pathway reduction in spend annually and over 5 years?

This intervention is not likely to be cost saving in the long term based on the DH's economic modelling, but would be considered as cost effective with a cost per QALY gained of around £3,000.

6 What is the impact of the intervention on health inequalities?

CVD affects deprived, ethnically diverse and male populations disproportionately so any prevention strategy will redress this balance. The current system of delivery (i.e. through GP practices) may favour those who already interact with health services (the more affluent population) so this may need to be reconsidered.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Reduce burden of informal care and reduced economic productivity due to ill-health.

8 What is the cost effectiveness case for scale of delivery?

Recommended at locality level through primary care, with local alternative venues.

9 Confidence in evidence

Primarily based on Department of Health, Economic modelling for Vascular Checks, August 2008. This pooled a series of studies on related screening tool and interventions and relied on NICE cost effectiveness evidence.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 1 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 4(1-5) |
| Impact on inequalities | 3 (1-5) |
| Wider socio-economic value | 2 (1-5) |
| Confidence in evidence | 3/4 |

Patient education

1 Intervention description, volume and outcomes

This review looks at educational and skills training delivered to groups by health care professionals or lay peers for long term conditions. Different programmes are required for each condition, so eligible population will be equal to prevalence for each.

2 How much does the intervention cost per year?

The average cost per person for the intervention is in the region of £400. This includes £300 per person for the self-management support and £100 per person for the clinician training and support.

3 What will be the impact on morbidity and mortality within 1 year of full operation and after 5 years?

GP consultations decreased by 7%; Outpatient visits decreased by 10%; A&E attendances decreased by 16%; Physiotherapy use decreased by 9%

4 What are the cost savings attached to this reduction in morbidity annually and over 5 years?

The estimated average annual net saving per patient is £120.

5 What is the total pathway reduction in spend annually and over 5 years?

Accounting for savings through service use, the intervention costs £280 per patient.

6 What is the impact of the intervention on health inequalities?

This intervention will only be applicable to patients who are highly motivated. Hence there is a possibility that this could increase health inequalities as it is more likely to attract those from higher socio-economic backgrounds. However, it has also been found to have high uptake in the Bangladeshi community.

7 What are the wider socio-economic benefits to local people – please quantify where possible (e.g. a reduction in crime, employability, greater community safety)

Social networks, self-efficacy, reduced isolation.

8 What is the cost effectiveness case for scale of delivery?

Recommended at locality level to promote access.

9 Confidence in evidence

Evidence is mainly from one RCT and one strategy document.

10 Headline findings

| | |
|---------------------------------|---------|
| Cost savings (NHS demand) | 3 (1-5) |
| Benefits saved (QALY/DALY/etc.) | 2(1-5) |
| Impact on inequalities | 1 (1-5) |
| Wider socio-economic value | 3 (1-5) |
| Confidence in evidence | 1b/4 |