Mixed-methods evaluation of 'Year in the Life', a Quality Improvement Programme in general practice to improve quality of care for patients with COPD in North East London

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RESEARCH PROTOCOL SUMMARY

The 'Year in the Life' (YiL) Programme in 2010 was a large-scale programme to improve the quality of general practice care for people with COPD. We are conducting retrospective evaluation of YiL in three Phases. This protocol is summary provides the study background, learning from Phase 1 of the evaluation, and sets out the aims and methods for Phases 2 and 3.

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Patient involvement: Barking & Dagenham & Havering Breathe Easy Groups

BACKGROUND

The setting and the quality Improvement intervention: The four boroughs of Redbridge, Barking & Dagenham, Havering, Waltham Forest serve a socio-demographically diverse population of approximately 1 million (Figure 1). The boroughs have coterminous CCGs and altogether comprise 184 practices. Until 2012, they worked as the Outer North East London cluster (ONEL). Since the NHS reforms in 2012, there are new affiliations between primary care organisations, with Waltham Forest now formally affiliated to East London & City CCGs (WELC) but the remaining CCGs working together as BHR CCG cluster.

Figure 1. Outer North East London

The Health Innovation Education Cluster (HIEC) working with UCL Partners and NHS partners in ONEL launched the COPD 'Year in the Life' (YiL) Programme in 2010. It was a large-scale programme designed to improve the quality of general practice care for people with COPD, and took as its focus the implementation of the 2010 NICE guidance. It comprised a series of educational activities underpinned by professional engagement and benchmarking, seeking to improve primary care for Chronic Obstructive Pulmonary Disease (COPD) and in turn reduce emergency hospital admissions. A preliminary evaluation at the end of 2012 suggested that COPD management improved and costs per patient fell, but some of the activities were not completed until January 2013, and the longer term impact of the interventions were not known.

**The evidence base on QI interventions with relevance to applying COPD guidelines in general practice:** Cochrane systematic reviews across a range of healthcare settings and disease areas indicate that:
- Educational meetings on their own are not likely to change complex behaviours but combined with other interventions, and strategies to increase attendance, they can be effective if used to prevent outcomes perceived to be serious[1].
- Audit and feedback, can result in small but potentially important changes; it is most likely to be effective when given more than once verbally and in writing, and to those not performing well to start with[2 3]. Use of theory in designing interventions is rare[4].
- Educational outreach is slightly more effective than educational materials or audit and feedback with most consistent effects on prescribing[5].
A narrative review by McDonnell et al[6] of educational interventions in COPD concluded that effects on patient outcomes were modest but more likely when interventions were: "*carefully designed, multifaceted, engaged health professionals in their learning, provided ongoing support, were sensitive to*

local circumstances, and delivered in combination with other quality improvement strategies or incentives."

There is a widespread but contested assumption that improving the quality of primary care can reduce emergency hospital admissions in chronic conditions generally (Figure 2).[7] With respect to COPD, NICE estimated that adherence to the new priority recommendations on prescribing in 2010 guidance could result in "*5% fewer admissions to hospital, resulting in around £15.5 million savings each year*".[8]
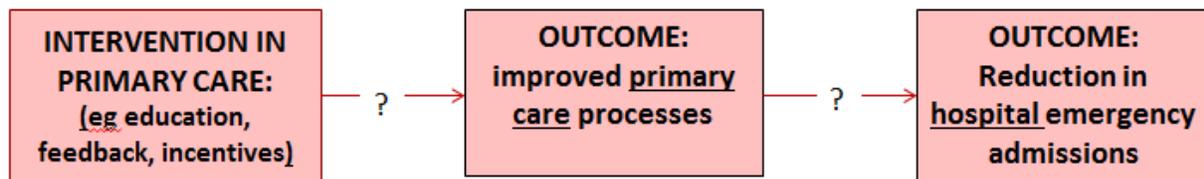
Figure 2 Theory underlying QI interventions in primary care to reduce emergency hospital admissions

In studies of chronic conditions, few have detected an impact on this outcome, even when primary care processes improve.[9-11] The evidence indicates that analysis of strategies to reduce EHA for chronic conditions should
a. test the assumption that improving primary care processes reduces emergency hospital use
b. take into account the population in which the interventions are introduced, given population factors are more strongly associated with EHA than healthcare factors
c. capture other activities that could impact on EHA to gauge the extent to which any observed effects could be attributable to a particular intervention.

Very few studies have comprehensively costed improvement strategies and there is little consistency in the data they use.[12] Economic evaluations are needed which include: the interventions to achieve change (e.g. training), the development costs of coordination and planning AND the costs associated with changes in care after the Programme.

STUDY AIMS AND OBJECTIVES

The **first aim** of this retrospective evaluation is to evaluate the sustainability and longer term impacts of the YiL Programme on COPD diagnosis and management and primary and secondary care use and costs. We will also seek to understand the factors that influenced its success or otherwise in a changing organisational context. To achieve this aim we will address the following **objectives**:
1. Develop a detailed understanding of the YiL Programme
2. Assess the impact on primary care processes and emergency hospital use
3. Understand facilitators and barriers to the success of YiL in adopting and sustaining (if relevant) quality improvements in primary care

4. Develop generalizable learning to inform future projects

The **second aim** is produce generalizable learning around the costs and sustainability of quality improvement initiatives in primary care and to inform design of future interventions.

DESIGN AND METHODS

The study is a mixed-methods evaluation with participation from those involved in developing the project and in delivery at all stages. There are three phases of this evaluation (Figure 3).
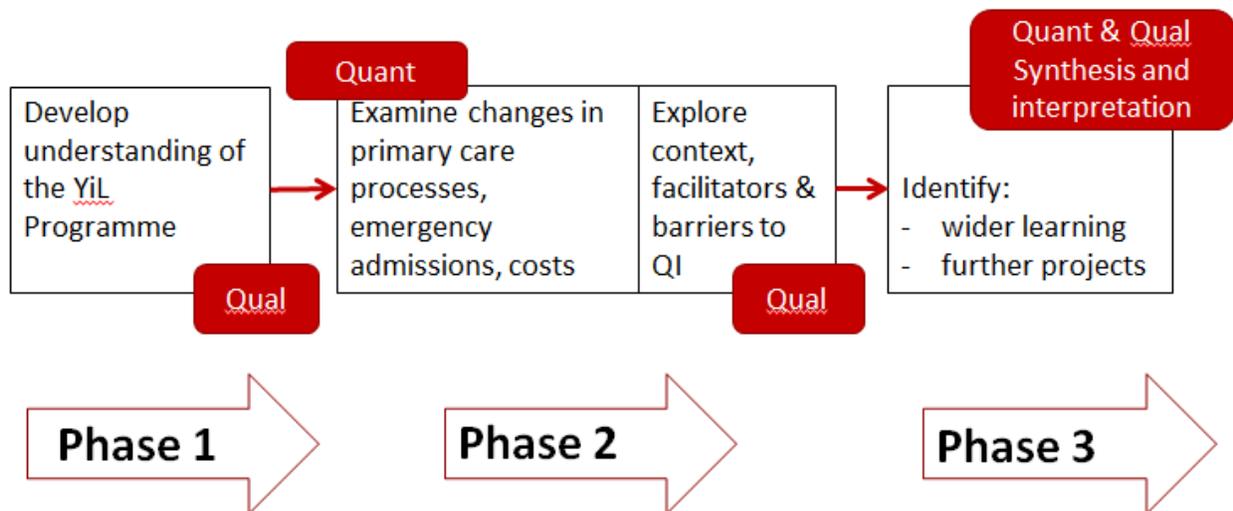
Figure 3 Three phases of the evaluation

Phase 1 (January-July 2014) involved analysis of over 100 documents (emails, meeting minutes, presentations, project summaries, interim evaluations) and in-depth interviews with the Programme designers (n=14) to address Objective 1 and to inform Objective 2. This included understanding: theories of change influencing the design of the programme; identifying all Programme intervention activities that required costing; constructing a timelines of activities and using participation lists for educational events to generate an measure of active participation in YiL for each practice. Findings:

a.   The Programme's design was influenced by different **theories of change**, the major ones being:
-    Value: QI should improve care but need not increase costs. This Programme will be an exemplar of the Value model
-    Education: Deficiencies in the quality of care are can be addressed by addressing gaps in knowledge and skills amongst practice staff
-    'Data': QI needs an IT system that can provide information on measures of performance for individual practices and across a geography; this information can a powerful motivator for change
-    Co-creation: practice staff need to be involved in designing QI interventions for them to be effective

b.   **Costs of the Programme** should take account of: Educational events (Masterclasses; Spirometry Training; Nurse mentorship); Audit and feedback (Dashboards); Standardised recording of care (ONEL Template) (both underpinned by substantial work on the IT infrastructure); Printing and

distribution of Patient Self-Management plans to practices; Planners' meetings/awareness raising activities.

c. There was no clear **start and end-point** for the Programme: it was in preparation and scoping for many months before activities were rolled out in a staggered fashion across the boroughs. However, the timeline shows a concentration in activities from September 2011, and these had ended by December 2012. Therefore time periods for time series analysis were agreed as:
    - Before intervention implementation period from 1 January 2009 until 30 September 2011
    - During intervention implementation period from 1 October 2011 until 31 December 2012
    - After intervention implementation period from 1 January 2013 until 31 December 2013

d. There was sufficient **participation data** to classify practices according to the level of their 'participation' of YiL interventions. Levels of involvement in YiL varied substantially by borough, with markedly lower uptake in Havering.

Phase 2 (October -Dec 2014) will use qualitative and quantitative methods to address Objectives 2-4 (Figure 4).

Figure 4. Phase 2 planned quantitative analyses
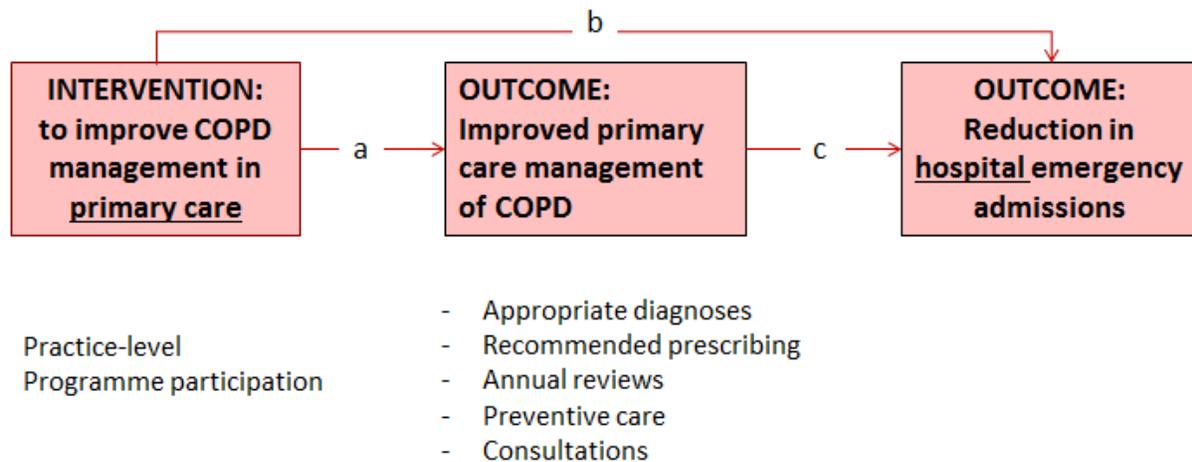
a. **Changes in primary care processes following YiL**
We will examine associations between practice participation in YiL and changes in:
-   primary care use (GP and practice nurse visits)
-   diagnosis and monitoring (spirometry recorded and annual review)
-   offer of disease management and prevention services (smoking cessation, flu vaccination, pulmonary rehab, self-management plan)
-   prescribing (particularly changes in oral steroids, long-acting and short acting muscarinic antagonists[13])
We will adjust for socio-demographic factors, smoking status, comorbidities, primary care use, disease severity and borough.

b. Changes in emergency hospital admissions (EHA) following YiL

We will use longitudinal data to examine changes in EHA with a primary diagnosis of COPD before, during and after the Programme's implementation (2009-2013) in two ways:

- using national hospital episodes statistics (HES) data by borough and month to calculate admission rates over time (before, during and after periods of Programme implementation) between Programme boroughs and the rest of England. Comparable boroughs to the four ONEL boroughs were selected using ONS corresponding local authorities, which identify areas of the country with similar socioeconomic and demographic characteristics according to census data. Crude COPD diagnoses rates per month per 1,000 populations were calculated for each calendar month from January 2004 to 31 December 2013 to show the overall trend. Poisson regression models will be built standardizing for age, gender, deprivation and calendar month. We will also build models with additional publicly available longitudinal data on the population (deprivation, age, sex, urban/rural), smoking, QOF indicators and COPD prevalence.

- linking patient-level practice records with EHA for all patients on a practice COPD register in Programme boroughs. This will use data extracted from GP information systems by Health Analytics (www.health-analytics.co.uk), and Secondary Users Service (SUS). We will use a time series analytical framework applying random-effects logistic regression to examine the monthly probability of EHA as a function of time (before, during and after implementation) by practice Programme participation. We will adjust for socio-demographic factors, smoking status, comorbidities, primary care use, disease severity and borough.   Supplementary analyses will include examination of changes in COPD admissions for those not on the register and changes in readmissions for those on the register.

c. Associations primary care processes and EHA

If changes detected for EHA or primary care processes, we will examine associations between primary care processes and EHA.

d. Impact on the costs of YiL design and delivery and ensuing changes in the costs of clinical management

The analysis of costs will be taken from the perspective of costs to the NHS.

- Design and delivery will encompass: the costs of educational meetings (practice staff time to attend training, venue hire and staff time to prepare or deliver training); costs of ongoing coordination, communication and strategic input to YiL; IT costs of developing the infrastructure necessary to use routinely entered primary care data to generate credible and regular benchmarking data on COPD processes of care

- Clinical management will encompass: primary care contacts (nurse and GP visits), COPD-related medications, emergency hospitalisations, using NHS reference costs.

e. Qualitative study of the context and facilitators and barriers at practice level

We will seek to interview staff from 8 practices in total, 2 from each borough, ideally representing practices with both high and low "uptake" of YiL component interventions to
- Gain clarity on particular issues about how the Programme worked;
- Identify facilitators/barriers to change to improve primary care through **e**xploring perceptions of the influence of YiL on changes to clinical processes of care, including evidence of sustained change; and views on contextual factors shaping practice-level changes in COPD processes of care.

Interviews will be conducted with staff nominated by the practice (e.g. practice nurse, GPs or practice manager) who can best speak to the themes to be covered. They will be audio recorded and transcribed. In analysing interviews and observations, we will combine a deductive approach (using the data to examine issues that combine relevant aspects of a number of different candidate conceptual frameworks and models as appropriate with an inductive approach (building and testing theories from the data as it emerges).

Phase 3 (November 2014 -January 2015) will involve:
a. **Synthesising findings from the qualitative and quantitative data in Phases 1 and 2**

We will seek to examine the extent to which findings from different sources are:
- *confirmatory*: this adds credibility to the findings we report.
- *explanatory*: ie provide complementary but different aspects of the same phenomenon. Where such data are available, we will seek to present both sources togethe r (eg in joint displays of data)
- *discordant*: ie where findings from one source are in conflict with another.

Patient involvement discussions (e.g. see: http://www.clahrc-norththames.nihr.ac.uk/reaching-out-to-people-with-copd-patient-experience-and-priorities/and discussions with the Programme steering group will be used to inform interpretation.

b. **Sharing findings:** A workshop will be held with invited participants on 13 January 2015 to share main emerging findings and identify generalizable learning for quality improvement in primary care and identify how study findings may apply to future QI projects. A report for the CLAHRC website will follow and findings will be submitted foe peer-reviewed publication.

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