

LETTERS TO THE EDITOR

Can financial incentives for improvements in healthcare quality enhance identification of COPD in primary care?

Undiagnosed chronic obstructive pulmonary disease (COPD) is a major public health issue, as it leads to patients missing out on appropriate preventive and therapeutic interventions.^{1–3} The ratio of diagnosed/predicted COPD prevalence differs widely between Primary Care Trusts (PCTs), suggesting that there are unacceptable variations in care.⁴ A National Clinical Strategy for COPD is to be launched in the UK in 2010 and there is an urgent need for evidence to support strategies to increase the identification of patients, particularly those with early disease.

In 2008 a locally enhanced service (LES) for COPD was introduced by NHS Kensington and Chelsea (K&C), giving general practitioners a small financial incentive for each individual screened and a larger payment for each patient diagnosed with COPD, where the quality items included in the LES were then documented. These included spirometry, pulse oximetry, body mass index, smoking cessation management, inhaler technique, Medical Research Council (MRC) dyspnoea score, medication review, a self-management plan, provision of a COPD rescue pack if appropriate and influenza and pneumococcal vaccination (see online for further details).

Practices received two types of payment; one for a screening test and one for the enhanced management of patients. Thus, if a patient was screened and found to have COPD, a practice would be paid both the screening fee and the enhanced management fee. Hence the incentive for screening was to locate new cases, so that they could go through the enhanced management template and attract the enhanced payment. The remuneration for the screening itself was quite small (only £10), but for the enhanced management was more significant (£80). This incentivised practices to focus screening on those patients most likely to have COPD—that is, older individuals and smokers.

Data on COPD prevalence for 31 PCTs in London from 2005 to 2009 were obtained from the national quality outcomes framework database. Individual practice data from K&C were compared with NHS Westminster, a partner PCT in an Integrated Service Improvement Programme, where the LES had not been introduced. Between 2005 and 2008 there was a linear increase in COPD prevalence in K&C ($r^2=0.997$). If the preceding trend had continued, the predicted prevalence for 2009 would have been 0.87% (95% CI 0.84% to 0.90%), whereas following the introduction of the LES it was 0.98% (figure 1). Neither Westminster nor other London PCTs showed any variation from the

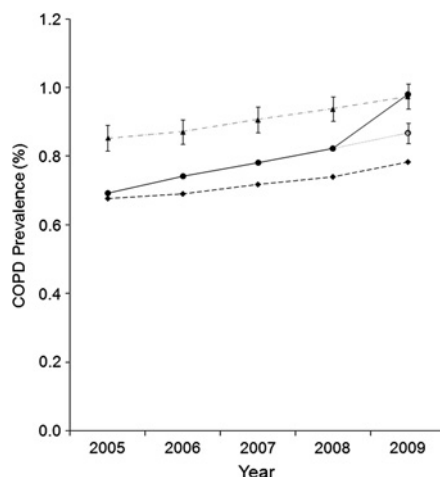


Figure 1 Change in chronic obstructive lung disease (COPD) prevalence over time in Westminster Primary Care Trust (PCT) (lower line, triangles); all London PCTs excluding Kensington and Chelsea (K&C) (upper line, triangles, SEM error bars) and K&C (middle line, circles). The dotted extension of the K&C line shows the projected prevalence and 95% CIs for K&C if the trend in preceding years had continued unchanged. The introduction of the LES (locally enhanced service) in K&C in 2008 was associated with a significant increase in COPD diagnosis in K&C, whereas the underlying trend in other PCTs is unchanged.

preceding 4 years' trend (data for each PCT and comparison of individual Westminster and K&C practices are available online).

In the 39 practices that participated in the LES in K&C, 963 patients were screened with spirometry, 31.5% of whom were diagnosed with COPD. The cost of the screening per diagnosis was £94, which included £1000 given to each participating practice up-front to cover set-up costs for the LES.

Our data are consistent with previous findings that financial incentives can accelerate improvements in healthcare quality.⁵ Incentivised targets for quality care in COPD through a LES can drive case-finding in general practice and could lead to a step change in the prevalence of COPD if adopted more widely.

Christine Falzon,¹ Sarah L Elkin,² Julia L Kelly,³ Frankie Lynch,⁴ Iain D Blake,¹ Nicholas S Hopkinson³

¹Central London Community Healthcare, St Charles' Hospital, London, UK; ²Respiratory Medicine, Imperial College NHS Trust, London, UK; ³Respiratory Muscle Lab, National Heart & Lung Institute, Imperial College, Royal Brompton Hospital, London, UK; ⁴NHS Kensington and Chelsea, Primary Care Directorate, St Charles' Hospital, London, UK

Correspondence to Dr Nicholas Hopkinson, Respiratory Muscle Lab, National Heart & Lung Institute, Imperial College, Royal Brompton Hospital, Fulham Road, London SW3 6NP, UK; n.hopkinson@ic.ac.uk

► Additional materials are published online only. To view these files please visit the journal online (<http://thorax.bmj.com>).

Funding This work was supported by the NIHR Respiratory Disease Biomedical Research Unit at the Royal Brompton and Harefield NHS Foundation Trust and Imperial College London, and by The Inner Northwest London Care Community Integrated Service Improvement Program for COPD.

Competing interests None.

Contributors The LES was developed by CF, IDB and FL. NSH, JLK and CF collected and analysed the data. NSH wrote the first draft with CF, and all authors contributed to the final draft and approved the final version. NSH is the guarantor of the paper.

Provenance and peer review Not commissioned; not externally peer reviewed.

Accepted 28 June 2010
Published Online First 14 October 2010

Thorax 2011;**66**:630.
doi:10.1136/thx.2010.140913

REFERENCES

- British Lung Foundation.** *Invisible lives. Chronic Obstructive Pulmonary Disease (COPD)—finding the missing millions.* <http://www.lunguk.org/Resources/British%20Lung%20Foundation/Migrated%20Resources/Documents/Invisible%20Lives%20report.pdf> 2007.
- National Institute for Clinical Excellence.** National clinical guideline on management of chronic obstructive pulmonary disease in adults in primary and secondary care. *Thorax* 2004;**59**:1–232.
- Parkes G, Greenhalgh T, Griffin M, et al.** Effect on smoking quit rate of telling patients their lung age: the Step2quit randomised controlled trial. *BMJ* 2008;**336**:598–600.
- Nacul L, Soljak M, Samarasinghe E, et al.** COPD in England: a comparison of expected, model-based prevalence and observed prevalence from general practice data. *J Public Health (Oxf)* 2010;doi:10.1093/pubmed/ftdq031.
- Campbell SM, Reeves D, Kontopantelis E, et al.** Effects of pay for performance on the quality of primary care in England. *N Engl J Med* 2009;**361**:368–78.

Multidrug-resistant tuberculosis: resistance rates to first and reserve antituberculosis drugs in the UK in 2008/9 and the role of rapid molecular tests for drug resistance

At the Health Protection Agency National Mycobacterium Reference Laboratory (HPA NMRL) between January 2008 and December 2009, we evaluated in patients with multidrug-resistant tuberculosis (MDRTB; isolates resistant to rifampicin and isoniazid) the rate of resistance to other first-line drugs (ethambutol and pyrazinamide) and to reserve drugs and the role of rapid molecular tests for rifampicin (and MDRTB) resistance.

MDRTB is difficult to manage—drugs are toxic, less effective and costly. Further problems arise from extensively drug-resistant tuberculosis (XDRTB); MDRTB isolates resistant to a quinolone and any of the injectable drugs (amikacin, capreomycin, kanamycin). Effective management of

Table 1 MDRTB and additional drug resistances: years 2008 and 2009 (complete drug profiles)

	2008 + 2009	
	N	%
Total MDRTB strains with complete DST profile	107	100%
Group 1		
MDRTB (R+H)	51	48%
MDRTB (R+H)+resistance to any reserve drug*	17	33%
MDRTB (R+H)+sensitivity to all reserve drugs*	34	67%
Group 2		
MDRTB (R+H)+/or E+/or Z	56	52%
MDRTB (R+H)+/or E+/or Z+resistance to reserve any drugs*	34	61%
MDRTB (R+H)+sensitivity to all reserve drugs*	22	39%
Resistance to first-line drugs		
Ethambutol	48	45%
Pyrazinamide	30	28%
Resistance to reserve drugs		
Injectables†	6	6%
Quinolones‡	21	20%
Prothionamide	41	38%
Streptomycin	68	64%
XDR	3	3%

In multidrug-resistant tuberculosis (MDRTB) isolates the rate of resistance to any reserve drug was significantly greater when accompanied by resistance to another first line drug (group 2 vs group 1) (Fisher's exact test $p=0.0065$).

*Reserve drugs: amikacin, capreomycin, kanamycin, moxifloxacin, ofloxacin and prothionamide (streptomycin is not included).

†Any of amikacin, capreomycin and kanamycin.

‡Ofloxacin and/or moxifloxacin.

DST, drug sensitivity test; E, ethambutol; H, isoniazid; R, rifampicin; XDR, extensively drug resistant; Z, pyrazinamide.

MDRTB/XDRTB depends on drug sensitivity test (DST) results to the remaining first-line and reserve drugs.

We have previously demonstrated that our national 'fastrack' molecular tuberculosis and rifampicin resistance identification service significantly reduces time for detection compared with bacteriological culture. Overall, *Mycobacterium tuberculosis* complex is detected 15.2 days earlier than gold standard automated liquid culture methods and rifampicin resistance 30.7 days earlier.^{1–3}

During 2008, 53 UK cases of MDRTB were reported by the HPA,⁴ of which the NMRL identified 47 (89%). The NMRL identified a further 65 cases of MDRTB during 2009. Of the 112 MDRTB cases, 107 (96%) patients had a complete DST profile for all 11 drugs tested, and 87 (78%) isolates were initially identified as MDRTB by 'fastrack'.

Fifty-one of the 107 isolates (48%) were resistant to rifampicin and isoniazid alone of the first-line drugs (table 1, group 1); 17 (33%) were additionally resistant to one reserve drug, ie, only 34 isolates (67%) were sensitive to all reserve drugs. In the remaining 56 isolates (52%), resistance to rifampicin and isoniazid was combined with resistance to another first-line drug (table 1, group 2), and 34 of these (61%) were additionally resistant to a reserve drug; 22 isolates (39%) were sensitive to all reserve drugs. Almost half (48%) of all MDRTB isolates were resistant to at least one reserve drug and 21% were resistant to all four first-line drugs.

Our results show multidrug-resistant isolates with resistance to one or more of the remaining first-line drugs increases the like-

lihood of resistance to reserve drugs. In table 1, the rate of resistance to any second-line drug was significantly greater in group 2 (61%) than in group 1 (33%) (Fisher's exact test $p=0.0065$). Our findings justify a policy of using the 'fastrack' approach and, when rifampicin resistance has been detected and a culture obtained, of setting up DST to all first and reserve drugs immediately and simultaneously (rather than the conventional approach of DST for reserve drugs only when MDRTB is detected phenotypically). The NMRL has recently added a similar test for resistance to isoniazid and the introduction of genotypic tests for XDRTB would be highly desirable. This policy would greatly accelerate the return of DST results to relevant clinics, reducing the time for the instigation of appropriate management, helping to reduce any increasing prevalence of MDRTB.

Acknowledgements The authors owe grateful thanks to all staff of the NMRL for their expertise and unfailing help and to all staff of other microbiology laboratories involved in the culture and submission of samples to the NMRL.

S L Mitchell,¹ N Seoudi,^{1,2} D C S Hutchison,¹ F A Drobniewski¹

¹National Mycobacterium Reference Laboratory, Barts and the London, Queen Mary's School of Medicine and Dentistry, London, UK; ²Institute of Dentistry, Barts and the London, Queen Mary's School of Medicine and Dentistry, London, UK

Correspondence to Dr F A Drobniewski, National Mycobacterium Reference Laboratory, Barts and the London, Queen Mary's School of Medicine and Dentistry, London, UK; f.drobniewski@qmul.ac.uk

Competing interests None.

Contributors SLM was responsible for the drug sensitivity tests. FAD was responsible for policy development and is the guarantor. DCSH and NS developed the database for assessing the drug resistance patterns in MDRTB cases. All authors participated in the study design, had full access to all of the data and take full responsibility for the integrity and interpretation of the results and writing of the manuscript. All authors approved the final manuscript.

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 19 August 2010

Published Online First 29 September 2010

Thorax 2011;66:630–631.

doi:10.1136/thx.2010.148866

REFERENCES

1. Krüner A, Yates MD, Drobniewski FA. Evaluation of MGIT 960-based antimicrobial testing and determination of critical concentrations of first- and second-line antimicrobial drugs with drug-resistant clinical strains of *Mycobacterium tuberculosis*. *J Clin Microbiol* 2006;44:811–18.
2. Risch-Gerdes S, Pfyffer GE, Casal M, et al. Multicenter laboratory validation of the BACTEC MGIT 960 technique for testing susceptibilities of *Mycobacterium tuberculosis* to classical second-line drugs and newer antimicrobials. *J Clin Microbiol* 2006;44:688–92.
3. Sam IC, Drobniewski F, More P, et al. *Mycobacterium tuberculosis* and rifampicin resistance, United Kingdom. *Emerg Infect Dis* 2006;12:752–9.
4. **Tuberculosis in the UK. Annual report on tuberculosis surveillance in the UK 2009.** London: Health Protection Agency Centre for Infections, 2009.

A randomised trial of domiciliary, ambulatory oxygen in patients with COPD and dyspnoea but without resting hypoxaemia

We read with great interest the recently published article by Moore *et al*¹ and we would like to make the following remarks.

Desaturation with exercise is still a hotly debated issue, and the papers that deal with the effectiveness of oxygen therapy during exercise in patients with chronic obstructive pulmonary disease who desaturate have not shown any benefit.^{2–3} It should nevertheless be pointed out that there are different types of desaturating patients with exercise. Indeed, we recently published a paper⁴ the results of which clearly show that only patients who desaturate before 1 min—early desaturators—during the 6-minute walking test are associated with an important desaturation during daily life activities. This is why we believe that desaturation with exercise research has to take into account whether the patients are early or late desaturators in order to reach sound clinical conclusions. Along the same lines, the effectiveness of oxygen therapy in these patients can differ according to the type of patients (early or late desaturators).