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POINTS FOR THE CLINIC

- Despite an increase in medication costs for angina, a primary care clinical pharmacy service provides a significant reduction in hospital admissions and GP consultations, resulting in significantly reduced overall costs, improvements in quality of life and symptom control, and improved GP satisfaction
- The project provides a good example of medicines optimisation to ensure that the right patients get the right choice of medicine for them, at the right time
- Trained pharmacists providing a service is a cost-effective model for improving angina symptom management. A randomised controlled trial is required to verify these results

Optimising medical therapy for stable angina patients

Percutaneous coronary intervention (PCI) has no benefit over optimising medical therapy (OMT) in the management of patients with chronic stable angina. Guidelines recommend an initial OMT approach; however, the use of medicines remains suboptimal. The aim of this study was to test whether a primary care clinical pharmacist service could enhance the management of patients with chronic stable angina.

It is estimated that almost 2 million people in England currently have or have had angina.[1] This represents a significant social and financial burden with angina consuming over 1% (£669 million) of all NHS expenditure in the year 2000, mainly due to hospital bed occupancy and revascularisation procedures.[2,3]

There are two approaches to the management of stable angina – percutaneous coronary intervention (PCI) and optimising medical therapy (OMT). International and UK guidelines, including the NICE Stable Angina Guidelines,[4,5,6] state that patients with a confirmed diagnosis of stable angina, who have been deemed to be appropriate for an initial strategy of medical management by a cardiologist following risk stratification, should be first optimised on two anti-anginal agents for symptomatic relief, prior to consideration for revascularisation.

PCI confers only a small, temporary symptomatic and quality of life advantage over OMT[6,7] and may have no impact in terms of reducing mortality compared with OMT.[6] Griffin *et al.* demonstrated that clinically appropriate percutaneous management within 12 months was not cost-effective.[8] A meta-analysis found no benefit of PCI over OMT for the prevention of death, nonfatal MI, unplanned revascularisation or angina.[9] Results from this meta-analysis also suggest that 76% of patients with stable coronary artery disease can avoid PCI if treated with medical therapy.[9]

Despite the evidence for OMT, treatment often remains suboptimal.[10] The UK GP research database of patients with a new diagnosis of coronary heart disease showed that only 5% reached the evidence-based target dose for beta-blockers and approximately 60% fail to reach even half this dose.[10] Persistence with beta-blockade at one year was 68% falling to 45% at 3 years.[11] Two thirds of patients with recognised side-effects were continued on the same dose of beta-blocker, 11% had their beta-blocker discontinued, 16% were down-titrated and only 6% were switched to an alternative.[12] An audit undertaken by six UK interventional centres, which documented medical treatment at the time of elective PCI, has also reported suboptimal anti-anginal and secondary prevention prescribing. Although beta-blockers were prescribed for 78% of patients, the mean bisoprolol equivalent dose was just 3.1 mg and second-line anti-anginals were seldom prescribed (rate-limiting calcium antagonist 11%, nitrate/nicorandil 35% and ivabradine 1 patient).[13]

This raises the question whether the management of stable angina patients in primary care can be improved to ensure that medical therapy is optimised in appropriately identified patients. Primary care, with its multi-disciplinary approach, offers the appropriate setting for managing patients with stable angina.

The aim of this study was to test whether a primary care clinical pharmacy service could enhance the management of patients with chronic stable angina to a standard of care defined by the NICE Stable Angina Guidelines[1] and the European Society of Cardiology (ESC) SCAD Guidelines 2013.[4] The specific objectives of the study were to optimise the medical treatment of patients with stable angina through patient education and optimisation of their prescriptions, measure the effect of optimising angina medicines on GP appointments for angina and emergency hospital admissions for angina and to improve the quality of life of patients with stable angina.

METHODS

Training

Three practice pharmacists working for a third party provider, Prescribing Support Services (PSS), who were independent prescribers, received specialist training in angina management by shadowing a consultant cardiologist in at least one clinic. The pharmacists were also trained on how to take blood pressure and pulse measurements. They were skilled in using general practice computer systems. Clinical support was provided by a GP with a special interest (GPwSI) in cardiology and a consultant cardiologist.

Guidelines on treatment choice based on NICE Stable Angina Guidelines CG126[1] and ESC SCAD Guidelines (2013)[4] were developed with a GPwSI in cardiology and a local cardiologist. The order for drug choice was based on NICE guidance with additional specific information provided in relation to heart rate and blood pressure. In addition, clearer guidance was given on which specific drug to prescribe, *eg* only a dihydropyridine (rather than a rate-limiting) calcium channel blocker with a beta-blocker. The guidelines in brief are detailed in Figure 1.

The service addressed the NICE guidelines[1] for stable angina specifically:

- People with stable angina are offered a short-acting nitrate
- People with stable angina are offered a beta-blocker or a calcium channel blocker as first-line treatment
- People with stable angina are offered a statin
- People with stable angina and established hypertension are offered antihypertensive treatment
- People with stable angina on optimal medical treatment have the opportunity to discuss benefits, limitations and risks of revascularisation (CABG and PCI) and continuing medical treatment

Identifying patients

The electronic clinical records of practices' registered populations were screened to identify individuals who were more likely to have angina symptoms (*eg* those on the Ischaemic Heart Disease (IHD) register but not prescribed any anti-anginal drugs; not prescribed any rate-limiting drugs; ordering one or more glyceryl trinitrate (GTN) sprays in last year). A list of potentially suitable patients was approved by the practice GPs.

Patients were sent a letter informing them that a nurse would be telephoning them to discuss their angina symptoms. The nurse administered a questionnaire about symptom control (*eg* how much various everyday activities could be done before experiencing symptoms), their understanding of the condition and its management as well as a quality of life scoring system. Patients whose angina symptoms were not well controlled were invited into a clinic via letter. Patients were asked to sign a consent form to confirm that they understood the rationale for the extra clinical service and had the opportunity to ask questions.

Medication review clinic

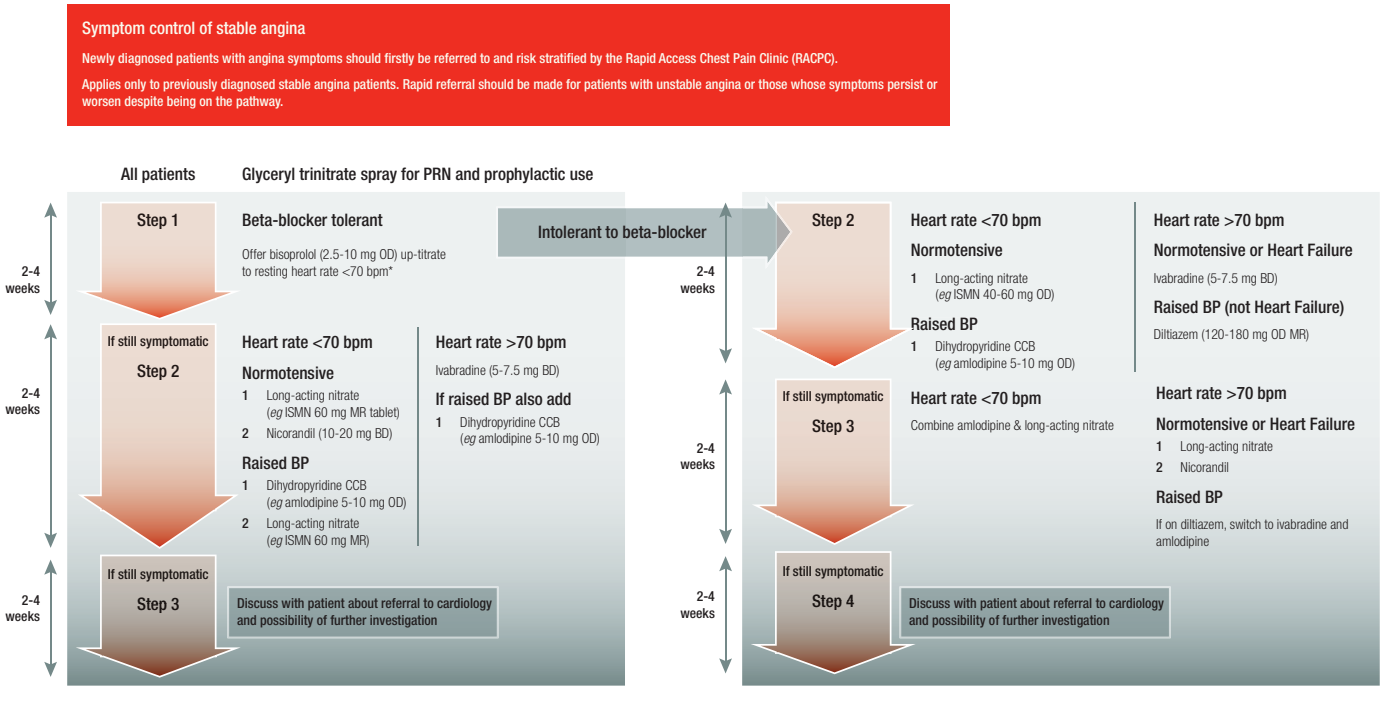
During each clinic appointment the following clinical assessments were conducted:

- Patient history
- Symptom control and level of physical activity
- Blood pressure
- Pulse rate
- Pulse rhythm - screening for atrial fibrillation (AF) via manual palpation of pulse for 1 minute
- Medicines-related side-effects / adverse drug reactions

At the first clinic further questions were asked to ascertain medicine-taking behaviour and any potential adverse effects and contraindications to medicines. Options for further medical management were agreed with the patient and implemented.

Patients were seen up to three times (at fortnightly intervals) to measure progress with medical management. An angina symptom assessment score based on the SF-36 Angina Health Survey[15] was made at each clinic. Patients with stable angina whose symptoms were not satisfactorily controlled with

Figure 1: Local guidelines for the symptom control of stable angina



optimal medical treatment, or had unstable or worsening angina, were referred to the GP with a recommendation for further specialist investigation. Other issues raised by patients that were not related to angina were referred back to the patients' regular GP.

Data recording

For each consultation the patients' medical record on the practice's clinical system was updated with:

- results from the clinical assessments
- all changes to medication
- counselling given to patients regarding changes
- appropriate clinical codes
- follow-up advice to the GP

Improvements in angina control were measured by comparing quality of life scores at baseline and at the end of the follow-up. These questionnaires were performed at the first telephone screen and then face to face at the final clinical review. A simple 5-point analogue scale was used to score symptoms which ranged from 1= symptoms at low level of activity (resting, dressing/bathing) to 5 = symptoms at high level of activity (walking uphill or quickly, climbing stairs, moving heavy objects).

Assessment of effects on unplanned hospital admissions and GP appointments for angina symptoms were made by measuring referral activity in the 6-month period before and after patients were seen in the angina clinics and by recording the number of GP appointments for angina in the 6-month period before and after the clinics.

RESULTS

Clinics were run in 17 general practices. The results reported here are in the first six practices where six months had elapsed since the reviews, thus enabling full data collection. Telephone screening was performed with 705 patients (Figure 2). A total of 188 patients attended and 88 patients (47%) needed an intervention and were seen a second time to assess change in symptoms. A third review was required for 14 patients (7.5%).

A quality of life improvement was reported in 82% of patients (72/88) (Table 1). The number of GP appointments relating to angina was reduced from 35 to 7 in the six months after the reviews compared with six months before the reviews (Table 2). The number of hospital admissions relating to angina fell from 18 to 5 (Table 3).

Changes in medicines and doses used to control angina symptoms are shown in Table 4. Increases in beta-blocker doses were the dominant intervention.

There was no change in the prescribing rates of anti-platelet drugs (pre: 95% patients treated; post: 95% patients treated); ACEI/ARBs (pre: 72%, post: 74%) and statins (pre: 85%, post: 89%).

The total costs of running the clinics were £2,375. These were the costs as defined in the contract between Servier and PSS. Medication costs increased by £2,261 per annum. These costs were worked out by taking a baseline assessment of the current medication of each patient, and comparing it with the medication costs post-service. The medication costs were calculated as cost per 28 days based on prices quoted in MIMS September 2014. This was offset by a reduction in hospital admissions costs of £19,357 (13 admissions avoided at £1,489 each).[15]

Figure 2: Number of patients with coronary heart disease, showing those suitable for a telephone review that may have benefited from a clinical review and the number who attended a review

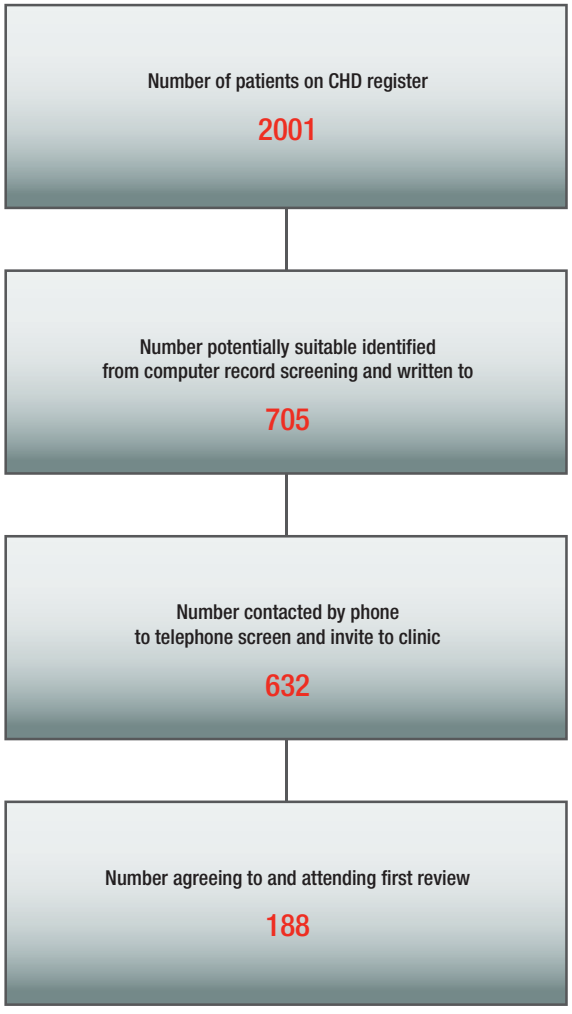


Table 1: Effect of angina review clinics on patients' activity (quality of life) score for those requiring an intervention

Percentage of patients showing an improvement in their quality of life	72/88 (82%)
Angina activity score (pre-baseline)* Score out of 5.00	3.00
Angina activity score (post – last clinic seen)* Score out of 5.00	3.81

*Activity calculated on quality of life questionnaires via patient interview on activity levels. Key for angina activity scores below:

Low level of activity (Resting, dressing/bathing)		Medium activity (Walking at normal pace, general housework)		High level of activity (Walking uphill or quickly, climbing stairs, moving heavy objects)
1	2	3	4	5

Table 2: Effect of angina review clinics on GP appointments for angina for the cohort of 88 patients who had an intervention

	Number of GP appointments	Number of patients affected
Number of GP appointments related to angina – 6 months pre first appointment	35	23/88 (26%)
Number of GP appointments related to angina – 6 months post first appointment	7	6/88 (7%)
Reduction in GP appointments related to angina	28	

Table 3: Effect of angina review clinics on hospital admissions for the cohort of 88 patients who had an intervention

Number of unplanned admissions related to angina – 6 months pre service delivery	18
Number of unplanned admissions related to angina – 6 months post service delivery	5
Reduction in unplanned hospital admissions related to angina	13

GP consultations were reduced by 28 (not costed for analysis). The total net savings were £13,820. When GPs were asked the question "On a scale of 1 (low) to 10 (high) how satisfied are you that NICE guidance was implemented?" the mean score was 9.3 (range 7.5 to 10).

DISCUSSION

A pharmacist-led medicines optimisation clinic for patients with stable angina was effective in improving symptoms, reducing GP appointments and reducing hospital admissions. Despite an increase in medicine costs there was a net saving to the NHS.

This was not a randomised controlled trial so improvements in outcomes may have been affected by other factors. However, the project did demonstrate that practice pharmacists can provide clinical services that are predominantly medicines-related and that patients experienced improvements in their symptom control.

The project provides a good example of medicines optimisation. Medicines optimisation aims to ensure that the right patients get the right choice of medicine for them, at the right time. The goal of medicines optimisation is to help patients to be appropriately treated and optimally managed, thereby improving their outcomes.[16] The service increased the cost of medicines for angina symptom control but reduced hospitalisation, therefore providing a net saving to the NHS and improved patient outcomes.

The three pharmacists providing the service were experienced in working in general practice and had an independent prescriber qualification and an interest in cardiovascular disease. This might not be a role suitable to all pharmacists and there is an argument for having a small number of trained and skilled pharmacists providing this service to several practices rather than trying to train all pharmacists or indeed trying to train a GP or nurse within each practice.

Table 4: Changes to medicines used in the medical management of stable angina

Drug	No. started	No. dose increased	No. changed	No. stopped	% on treatment pre-review	% on treatment post-review
Beta-blockers	6	27	7	0	68	75
Calcium channel blockers	2	7	5	0	39	41
Nitrates	10	7	0	0	34	45
Other anti-anginals	11	6	0	2	34	44

We found problems in identifying suitable patients to attend. Despite devising a screening tool and conducting telephone interviews to identify suitable patients, half of the patients did not receive any intervention as they considered their symptoms well-controlled.

A larger cohort is required to see if the service's results are replicated over a number of practices and PSS will continue to analyse data as we expand the service to see more patients. It will also be of interest to see what impact the service has on PCI rates.

Acknowledgements

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