Bridging the treatment gap: the primary care perspective

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The Darlington heart failure service model, part of the South Durham Heart Failure Network, was devised to overcome barriers to accurate diagnosis and effective management of heart failure. It involves rapid diagnosis of left ventricular systolic dysfunction (LVSD) and ongoing heart failure management. A weekly one stop diagnostic clinic, run by a general practitioner (GP) specialist and a heart failure nurse, is jointly funded by the primary care trust and the South Durham NHS Trust. If LVSD is confirmed, a management plan is formulated which includes patient education and initiation of evidence based treatment. The heart failure nursing service is invaluable in bridging the gap between primary and secondary care. Local guidelines, together with continuing education of GPs and practice nurses, and the new General Medical Services contract, should further increase the uptake of evidence based treatments at target doses.

Possible drivers for change in the management of post-myocardial infarction (MI) left ventricular systolic dysfunction (LVSD) include the extensive evidence base and the various national guidelines. In addition, the National Service Framework (NSF) for coronary heart disease (CHD), the new General Medical Services (GMS) contract and the CHD and primary care collaboratives (including the Myocardial Infarction National Audit Project (MINAP)) are helping to close the gap between evidence and practice.

The NSF for CHD¹ states that patients with suspected heart failure need appropriate investigations to confirm or refute the diagnosis. For patients in whom heart failure is confirmed, the cause should be identified and appropriate treatments offered. The NSF recommendations include echocardiography for all patients with suspected heart failure, development of a consistent and systematic approach to identify patients with heart failure (or at high risk of developing it), and delivery of appropriate care to those diagnosed with heart failure, together with regular review.

HEART FAILURE SERVICES: THE DARLINGTON MODEL

The heart failure service in Darlington forms part of the South Durham Heart Failure Network. The service was developed following qualitative research investigating the barriers to accurate diagnosis and effective management of heart failure in primary care.² The research highlighted

three main areas of difficulty: general practitioners' (GPs') uncertainty about clinical practice (including lack of confidence in making an accurate diagnosis and concerns about use of angiotensin converting enzyme (ACE) inhibitors, β blockers, and spironolactone in patients who are often elderly and frail and with co-morbidities); local organisational factors; and lack of awareness of the relevant research evidence. In terms of local organisational factors, it appeared that some doctors were not taking advantage of the availability of open access echocardiography services in County Durham, while in secondary care, not all patients who had an MI had an echocardiogram. Furthermore, GPs using the service had difficulty in interpretation of technical results and doubts about initiation of newer agents for LVSD.

The current heart failure service is outlined in box 1. The heart failure nursing service is invaluable in bridging the gap between primary and secondary care. It provides rapid access to diagnostic services for patients with possible heart failure, advice to GPs for patients with increased symptoms of heart failure, optimisation of patients' medication, and symptom management. The nurse also provides support to patients and carers, including those who have had surgical interventions. Advice and support, including palliation and terminal care, is available for patients with advanced heart failure.

ONE STOP DIAGNOSTIC CLINIC

It was clear that to meet the milestones in the NSF for CHD there was a need for accurate diagnosis of LVSD and provision of evidence based treatment. At the time the clinic was set up, the open access echocardiography service had ceased because of a lack of technicians, and therefore alternative arrangements were needed.

The one stop diagnostic clinic was established in January 2002 as a joint venture between the primary care trust (PCT) and South Durham NHS Trust. Funding for the GP specialist in heart failure is provided by the PCT and the hospital trust, the specialist nurse is funded by the PCT, and auxiliary nurse and secretarial support is funded by the hospital trust. The British Heart Foundation also funds a specialist nurse. While

Abbreviations: ACE, angiotensin converting enzyme; BNP, B-type natriuretic peptide; CHARM, candesartan in heart failure assessment of reduction in mortality and morbidity; CHD, coronary heart disease; GMS, General Medical Services; GP, general practitioner; LVSD, left ventricular systolic dysfunction; MI, myocardial infarction; MINAP, Myocardial Infarction National Audit Project; NSF, National Service Framework; NT-proBNP, N terminal pro B-type natriuretic peptide; PCT, primary care trust

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Box 1: Heart failure services in Darlington

Current services

- Rapid diagnosis of left ventricular systolic dysfunction (LVSD)—one stop clinic
- South Durham local guideline/protocol care pathway and basic formulary
- Heart failure nursing service
- Ongoing LVSD management including drug titration
 - primary care (coronary heart disease and heart failure clinics/heart failure nursing service)
 - secondary care (nurse/pharmacist titration clinics)
- Palliative care

Ongoing developments

- Secondary care integrated pathway
- Heart failure rehabilitation/exercise training programme
- Common IT database

there have been reports of rapid access clinics,³ we believe that this is the first GP specialist led clinic.

The clinic is run by a GP specialist and a heart failure nurse.⁴ The service is based upon local heart failure guidelines and protocols. The weekly clinic runs in parallel to a consultant cardiologist's clinic. As it has been suggested that B-type natriuretic peptide (BNP) may have diagnostic utility in suspected heart failure,⁵ BNP and N terminal pro-BNP (NT-proBNP) were used initially as research tools in the clinic (funded respectively by the PCT and Roche Diagnostics). This study identified a cut off point of 150 pg/ml for NT-proBNP, which was used by GPs to triage referrals to the diagnostic clinic within the setting of a pilot project funded by the Northern Workforce Confederation. This testing has been temporarily suspended while the results from the first 600 patients are evaluated. It is hoped that this project will answer some pragmatic questions around the practicability of use in primary care, appropriate decision cut points, cost benefit, and the role of electrocardiography in this setting.

Access to the clinic is by means of a standardised one page referral form completed by GPs. Referrals are also taken from secondary care outpatient and inpatient services and specialist nurses. The GP is asked to undertake baseline blood tests, ECG, and chest x ray. At the clinic, all patients have an ECG, chest x ray (if not done by the GP), and echocardiography. Patients in whom heart failure or LVSD is not confirmed are discharged back to the GP or, if necessary, to another physician. If LVSD is confirmed, a management plan is formulated which includes patient education and initiation of evidence based treatment. The specialist heart failure nurse provides education for the patient and the carer: patients are given a *Passport to living with heart failure* booklet and other literature, as well as a telephone number so they can contact the nurse if they would like a home visit or wish to discuss any aspect of their care.

FIRST YEAR AUDIT OF THE CLINIC

In the first year, 217 patients were seen in the one stop diagnostic clinic. The age range of patients was 34–93 years, with a mean of 73 years, and 61% were female. LVSD was diagnosed in 38% of patients; another 37% had other significant cardiovascular diagnoses. The clinic data suggest that ECG is not as good a negative predictor as expected: 22%

Table 1 One stop clinic medication for patients with left ventricular systolic dysfunction

Drug	Proportion of patients receiving
Diuretics	89%
ACE inhibitor	88% (intolerant 4%; contraindicated 1%)
Angiotensin II receptor antagonist	7%
ACE inhibitor or angiotensin II receptor antagonist	95%
β Blocker	70% (intolerant 9%; contraindicated 21%)
Digoxin	11%
Spironolactone	8%
Nitrate	8%
Statin	44%
ACE inhibitor at target dose	74%
β Blocker at target dose	63%

ACE, angiotensin converting enzyme.

of patients with LVSD had a normal ECG, giving a negative predictive value of 82%.

In terms of medication prescribed at the clinic, there was a high level of use of ACE inhibitors and β blockers (table 1): 95% of patients were taking an ACE inhibitor or angiotensin II receptor antagonist, and 70% were taking a β blocker (30% had contraindications or were intolerant). Target doses were achieved in 74% of patients taking ACE inhibitors and in 63% of those taking β blockers. Spironolactone has been more difficult: many patients have experienced side effects and have had to discontinue treatment with this drug.

The CHARM programme⁶ showed the UK to have lower use of β blockers and spironolactone than other European countries, even in specialist centres. Our clinic experience demonstrates that β blocker usage can be improved.

For identifying patients with suspected heart failure, the two commercially available assays (BNP and NT-proBNP) were investigated in patients attending the clinic.⁷ The results indicate that both assays could be used to select referrals to a heart failure clinic or for echocardiography. Both showed high negative predictive values (88–92%) for excluding LVSD. A satisfactory cut-off of 150 pg/ml of NT-proBNP was identified but this requires validation in a real life GP setting.

The integration of the one stop diagnostic clinic into the Darlington heart failure service is shown in fig 1. The clinic takes referrals from different areas. Once a diagnosis has been reached, the patient either returns to primary care, or attends the heart failure clinic or other specialties as appropriate. Ongoing LVSD management is carried out in both primary and secondary care. After continuing education, many GPs are now confident in titrating the doses of β blockers and other drugs. In secondary care, ongoing management is carried out by a specialist nurse and a pharmacist. A project to assess the effectiveness of heart failure rehabilitation and exercise training is planned in conjunction with York University.

NEW GMS CONTRACT

The new GMS contract⁸ should further increase the uptake of evidence based treatments. The contract enables separate agreements to be negotiated for each practice. It rewards quality, with a system in which all work is converted into points. For 2004/5, one point is worth £75 and for 2005/6 one point will be worth £120. The four main domains of quality are clinical, organisational, patient experience, and additional services (including child health surveillance, childhood immunisation, cervical screening). There are also 50 bonus points for achieving access targets. Clinical issues account for the highest number of points and 346 of the 550 clinical

Figure 1 The Darlington integrated heart failure service. CHD, coronary heart disease; CHF, chronic heart failure; CRT, cardiac resynchronisation therapy; GP, general practitioner; HF, heart failure.

quality points are broadly based around cardiovascular disease. Preliminary audit data from the 11 GP practices in Darlington show that an average 4.8% of patients have CHD. Most of the practices are achieving the target of 70% use of ACE inhibitors post-MI, one of a total of 15 CHD markers (table 2).

There are several ways in which secondary care colleagues can help GPs meet the targets in the GMS contract. Good communication and interaction with primary care is essential. It is important to agree local management guidelines, and to have rapid, clear, and accurate correspondence, perhaps using a template for clinic letters to highlight the data that are required. In the Darlington area, pharmacists now indicate on discharge letters why a drug has been stopped or started and this information is very useful to GPs. There is a need for education of hospital medical staff about the contract.

MINAP data for the Darlington Memorial Hospital show that the NSF target of prescribing of ACE inhibitors and β blockers to eligible patients on discharge after MI is being met in 86% and 83% of patients, respectively.

A brief protocol for post-MI discharge has been produced locally. This emphasises that GPs or practice nurses with a CHD certificate are expected to see their patients within 14 days for medical review, which includes checking for complications such as heart failure. The GP, or practice nurse, would also be expected to address any anxiety or depression, to alter repeat medications to reflect the patient's new drugs, and to check that the patient has been considered for secondary prevention drugs. At the same time, the patient is included on the CHD register and participation in cardiac

rehabilitation is encouraged. A laminated sheet has also been produced that gives advice on use of appropriate agents and titration to target doses, both for patients with and without heart failure.

Table 2 CHD markers in the new GMS contract

CHD marker	No. of points available	Audit standard*
Register	6	
Patients with newly diagnosed angina who are referred	7	90% (100)
Patients with record of smoking	7	90% (89)
Patients who have been offered smoking cessation advice	4	90% (93)
Patients with record of BP	7	90% (96)
Patients with BP <150/90 mm Hg	19	70% (78)
Patients with record of cholesterol	7	90% (85)
Patients with total cholesterol <5 mmol/l	16	60% (69)
Patients on antiplatelet treatment or anticoagulant	7	90% (91)
Patients on β blocker	7	50% (58)
Patients on ACE inhibitor post-MI	7	70% (93)
Patients with influenza immunisation	7	85% (0)†
Register of patients with CHD and LVD	4	–
CHD and LVD confirmed by echocardiogram	6	90% (100)
CHD and LVD patients treated with ACE inhibitors or ARB	10	70% (95)

*Figures in brackets are those from author's practice, December 2004.

†Before start of annual flu immunisation programme.

ACE, angiotensin converting enzyme; ARB, angiotensin II receptor blocker; BP, blood pressure; CHD, coronary heart disease; GMS, General Medical Services; LVD, left ventricular dysfunction.

Learning points

- Post-myocardial infarction patients need prompt diagnosis of left ventricular systolic dysfunction (LVSD) and initiation of evidence based treatment
- Current fragmented models of care mean that patients with mild or asymptomatic LVSD may not be identified
- The Darlington model shows the benefits of developing an integrated management plan for early, accurate diagnosis and management of heart failure across primary and secondary care

GPs with a specialist interest in cardiology can improve the communication between primary, secondary, and tertiary care and can help with meeting the aims of both the NSF and the GMS contract. They can assist with local heart failure registers and with audit, and can also participate in training and continuing professional development of the primary health care team as well as with service development and primary care research.

BARRIERS TO EVIDENCE BASED CARE

In terms of the barriers to evidence based care, there are three main areas to focus on: patient, physician, and system.

In order to overcome patient barriers, it is important to prescribe simple drug regimens where possible. Compliance aids can be helpful, especially for the elderly, many of whom may be taking as many as 10 different drugs. Cardiovascular risk education for patients and carers, and social support are important.

Physician barriers may be overcome by improving communication between the different health care sectors, and through education.

System barriers may be overcome through reinforcement and follow up, for example, with protocol based chronic disease management systems and repeat prescription monitoring, together with expedient diagnostic services.

Finally, it is important to emphasise the GP's vital role in the early detection and treatment of the main risk factors for the development of heart failure. Primary health care teams

are geared up to the NSF challenge and through CHD secondary prevention clinics can address the issues of post-MI care, lifestyle modification, hypertension, ischaemic heart disease, diabetes, and the other aspects of preventive care.⁹ In this way, primary care can develop holistic, structured primary and secondary preventive services which diminish the need for more expensive hospital care in the future.

CONCLUSION

This Darlington heart failure model shows the benefits of developing an integrated management plan for early, accurate diagnosis and management of heart failure across primary and secondary care. It includes a heart failure nursing service and a one stop clinic for rapid diagnosis of LVSD. Audit of the first year of the diagnostic clinic shows a high level of prescribing of ACE inhibitors and β blockers to patients with LVSD. The new GMS contract should further increase the uptake of evidence based treatments.

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