

Establishment of a disease register for patients with LVSD in primary care and comparison of current practice with evidence-based guidelines

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AIM • To identify patients in primary care with a diagnosis of left ventricular systolic dysfunction (LVSD) and to establish a disease register. To compare current recorded care with evidence-based guidelines.

DESIGN • Case note survey.

SUBJECTS AND SETTING • Patients with heart failure, LVSD, pulmonary oedema and cardiomyopathy at 8 inner city general practices in Glasgow.

RESULTS • We found 1,480 patients with a possibility of LVSD on the basis of a computer search for medication or computerised summaries in 8 practices. All 1,480 records were reviewed but only 326 (22%) had diagnosis confirmed on detailed review. Prevalence was (38/1,000 over 65) and (2/1,000 under 65). Aetiology was similar to previous work. Records of echocardiography were found in 264 (81%). A record of the grade of LVSD was only found in 213 patients (65%). A record of New York Heart Association classification was present in 38 (11%). Loop diuretics were prescribed in 249 cas-

es (76%). Angiotensin-converting enzyme inhibitors were used in 217 cases (66%) but only 93 (28%) were at target dose for LVSD. Spironolactone was prescribed in 28 patients (9%) and an additional 11 patients were intolerant to spironolactone. Beta blockers were prescribed in 102 patients (31%), but of these 38 were prescribed an unlicensed beta blocker and 76 had a history of IHD so it seems unlikely these had been started for LVSD. 125 patients (38%) had been seen in the past 6 months and 230 (70%) had been seen in the past 30 months at a cardiology or general medical clinic in secondary care.

CONCLUSIONS • It is possible to identify patients with LVSD in primary care and establish a disease register, although this may not be complete. Current practice falls short of best evidence. Most patients had been seen in the secondary sector in the previous 30 months. In view of the significant morbidity and mortality associated with sub-optimally managed LVSD there is an urgent need to improve the management of LVSD in the hospital and community settings.

Heart failure carries a poor prognosis with a five year mortality of 26–75 per cent¹ and there is a strong evidence base to support intervention with drug treatment. Drug treatment has a significant impact on morbidity and mortality. Angiotensin-converting enzyme inhibitors,^{2–4} angiotensin II receptor antagonists,⁵ beta-blockers^{6–8} and spironolactone⁹ are all known significantly to effect survival and quality of life in this group. Recent attempts to draw these data together have resulted in the production of the Scottish Intercollegiate Guidelines Network guidelines in

Scotland. SIGN¹⁰ recommends that the first stage of improving the care of this group of patients is to establish a disease register, and characterise the patients with a view to identifying a need for improvement.

We set out to review current investigations and treatment in all patients with left ventricular systolic dysfunction (LVSD). The aim was to establish a disease register in primary care with a view to creating a baseline against which an intervention could be compared.

METHOD

We looked at eight general practices (combined population 44,000) in an inner city area of Glasgow. All practices had access to open echocardiography and were in the catchment area of large teaching hospitals. All practices had a computerised summary for patients' past medical history. Searches were conducted on the primary care com-

Panel 1: Epidemiology and results of initial case note review

Total population	44,000	
Population over 65	6,343	
Number of patients identified by the search	1,480	
Number of patients with a diagnosis of LVSD	326	
Average age	71	(Male 70) (Female 73)
Sex distribution	Male 182	(56%)
	Female 144	(44%)
Prevalence over 65	241	(38/1,000)
Prevalence under 65	85	(2/1,000)

puting system (GPASS) to identify patients who were receiving a repeat prescription for a loop diuretic or had a recorded history of LVSD on the computer summary. A medical student who had been trained in

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TABLE 1: USE OF ACE INHIBITORS (N=326)

	Number of patients	Average dose (mg)	*Target range (mg)	Number in target range
Captopril	40	81	150-300	11
Ramipril	62	7.8	10	38
Enalapril	46	18	20-40	27
Lisinopril	50	13.5	30-35	5
Perindopril	14	3.7	4	10
Quinapril	3	16	10-20	1
Trandolapril	1	2	4	0
Cilazapril	1	2.5	1-2.5	1
Total	217 (66%)			93 (28%)
No record	80 (24%)			
Angiotensin II receptor antagonists	19 (6%)			
Intolerant	10 (3%)			

*BNF/SIGN 35 based on available evidence where possible from trial data.

TABLE 2: USE OF BETA-BLOCKERS (N=326)

Beta-blocker	Number	History of ischaemic heart disease in this sub group
Carvedilol	20	15
Bisoprolol	44	33
Atenolol	31	22
Metoprolol	6	5
Sotalol	1	1
Intolerant	2	
Total	104 (31%)	76 (23%)

TABLE 3: USE OF SPIRONOLACTONE (N=326)

	Number
Spironolactone	28
Intolerant	11
Total	40 (12%)

TABLE 4: USE OF LOOP DIURETICS (N=326)

Loop diuretic	Number	Average dose
Furosemide	226 (69%)	64mg
Bumetanide	23 (7%)	2.7mg
Total	249 (76%)	

TABLE 5: MOST RECENT HOSPITAL APPOINTMENT IN A CARDIOLOGY OR GENERAL MEDICAL CLINIC (N=326)

Year of attendance at hospital	Number
1998 and before	56 (17%)
1999	36 (11%)
2000	69 (21%)
2001 (review completed in August 2001)	125 (38%)
No record of review	26 (8%)
No date	14 (4%)

data collection using a standardised proforma then reviewed case records. The primary care case records are unlike any other data in the National Health Service because they represent a complete record of all medical contact received by the patient in primary and secondary care. Patients included were those who had a reference anywhere in their case records of heart failure, LVSD, pulmonary oedema or cardiomyopathy.

RESULTS

We conducted a detailed case note review of 1,480 records identified by the computer search of which only 326 had a diagnosis of LVSD (Panel 1).

The data were collected over a two-month period in 2001. We established that this was a representative sample by comparison with previously published work.¹

We recorded the following: the use of echocardiogram and record of grade of LVSD; record of New York Heart Association NYHA classification (see Panel 2); use and dose of ACE inhibitor (Table 1), beta-blocker (Table 2), and spironolactone (Table 3); use of loop diuretics (Tables 4); and last recorded contact with secondary care (Table 5).

Most patients had received an echocardiogram (80 per cent) but less than half had a recording of the severity of LVSD. Evidence-based prescribing is dependent upon each patient having a record of grade of LVSD or NYHA classification.

ACE inhibitors are effective in all grades of LVSD.²⁻⁴ Of the group, 24 per cent had no record of having been started on an ACE inhibitor. Of those patients on an ACE inhibitor, only 42 per cent were receiving a prescribed dose in accordance with the guidelines. This represents 28 per cent of the total patients with diagnosed LVSD.

Certain beta-blockers are recommended in NYHA Class I-III and have similar and additive effects on mortality as ACE inhibitors.⁶⁻⁸ Carvedilol and bisoprolol are the only currently licensed beta-blockers for LVSD. Of the group, 104 (31 per cent) were on a beta-blocker but 38 of these were on unlicensed beta-blockers and 76 had a history of ischaemic heart disease. As a result it was not possible to ascertain how many patients had been started on a beta-blocker for LVSD.

Panel 2: Use of echocardiogram and record of grade

Record of echocardiogram	264 (80%)
Record of grade of LVSD from echocardiogram	213 (65%)
Grade moderate/severe	149 (45%)
Record of NYHA classification	38 (11%)

Spironolactone is effective in NYHA class III-IV and has an additional effect on mortality when used with ACE inhibitors and beta-blockers. Of the group, 40 had been tried on spironolactone; however, 149 could have been considered on the basis of an echocardiogram showing moderate to severe impairment.

We used loop diuretics as a search criteria on the premise that most patients would be symptomatic but only 76 per cent were in fact prescribed a loop diuretic.

Results showed that 125 patients in the group (38 per cent) had been seen in the past eight months, 194 (59 per cent) had been seen in the past 20 months and 230 (70 per cent) had been seen in the past 32 months.

DISCUSSION

We acknowledge the limitations of the data collection and it is possible that some cases might have been missed. This is because the search criteria rely on accurate and timely recording of drugs and diagnoses on practice computer systems. However, the data collection and searches were completed by one person therefore reducing recorder variation.

Patients can be found with LVSD and a disease register established using the primary database if these records have a computer summary. If there are no summaries then a search on the basis of loop diuretics would only yield about 75 per cent of patients. The addition of searching for ACE inhibitors may not yield any higher numbers and would significantly increase the number of records reviewed. This reinforces the urgent need to have computerised data in health care in the UK.

The frequency of echocardiogram in other surveys ranges from 28 to 72 per cent.¹⁰ The hospitals serving this population had open access echocardiography and a rate of 80 per cent may reflect this. Unfortunately the recording of grade of LVSD is poor as is the recording of NYHA classification. These measurements are extremely important when the use of spironolactone and beta-blockers are being considered.

The frequency of ACE inhibitor prescribing in other studies ranges from 10 to 58 per cent.¹⁰ Our sample has a higher frequency of 66 per cent and, more relevantly, only 24 per cent have no record of ever having been considered for an ACE inhibitor. A

study suggests that ACE inhibitor dose optimisation can significantly improve clinical outcomes using a nurse-led intervention.¹¹ In this review only 28 per cent of patients were at optimal dose of ACE inhibitor. There is a need to titrate ACE inhibitor doses if the outcomes from large scale trials are to be replicated.

Beta-blocker use in our sample, at 31 per cent, probably does not reflect their use in LVSD and is an overestimate. It seems likely that many patients had been prescribed a beta-blocker for ischaemic heart disease. Beta-blockers licensed for the management of LVSD are difficult to initiate, and need careful dose titration and supervision. Carvedilol is the only beta-blocker with a licence for initiation out of the hospital setting.

Spiroonolactone is under-used with only 12 per cent having been started on the basis of an echocardiogram. The 45 per cent of patients in our sample who are known to

have moderate to severe LVSD are candidates for spironolactone. It is acknowledged that barriers to initiation might include the need for careful supervision and monitoring.

Seventy per cent of the group had been seen in the hospital sector in the preceding 32 months. However, their care falls short of best practice.¹⁰ We would argue this reflects the lack of support and time that is needed in this complex patient group. There is an urgent need to develop models to improve care between primary and secondary care. The role of the heart failure nurse specialist is established in the hospital sector¹¹ but not in community practice. We are currently evaluating the feasibility, impact and cost effectiveness of a pharmacy-led intervention in primary care to initiate and titrate ACE inhibitors. Feedback and evidence-based summaries on all patients are also being sent to local clinics attended by the patients. The NHS should

develop a chronic disease strategy for LVSD.

CONCLUSION

Patients with LVSD can be identified and a disease register established in primary care, accepting the limitations of computer data recording. Care of patients in the above sample is sub optimal. Much could, and should, be done to improve the quality of the care provided through the increased use of drugs known to improve outcomes. Specifically the initiation and titration of ACE inhibitors, beta-blockers and spironolactone should be organised and structured. Patients have hospital contact but care remains sub optimal. There is a case, therefore, for a model that involves the support of a nurse specialist or pharmacist.

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Correction

This paper wrongly states that carvedilol is the only beta-blocker with a licence for initiation out of the hospital setting. Bisoprolol is the only beta-blocker with such a licence.