



# Best Practice

Evidence Based Practice Information Sheets for Health Professionals

## Nurse-led cardiac clinics for adults with Coronary Heart Disease

### Information Source

This Best Practice Information Sheet is based upon a systematic review of research, published by Blackwell Publishing Asia and conducted by the Centre for Evidence-based Nursing South Australia, a collaborating centre of the Joanna Briggs Institute.<sup>1</sup> The primary references on which this information sheet is based are available in the systematic review report available online via Blackwell Synergy [www.blackwell-synergy.com](http://www.blackwell-synergy.com) and to members of the Institute via the web site: [www.joannabriggs.edu.au](http://www.joannabriggs.edu.au)

### Background

The literature suggests that nurse-led clinics can be distinguished by certain characteristics or features related to their structure and/or function. These are reported to include a focus on health rather than illness, and an emphasis on life management rather than diagnosis and intervention.

Nurse-led clinics also provide an opportunity for increased development of professional autonomy amongst nurse practitioners. This has been recognised in the literature, particularly in areas such as cancer therapies, Human Immunodeficiency Virus (HIV) or Acquired Immune

This information sheet covers the following:

- Nurse-led education and self help
- Education and motivational interview
- Audit and recall
- Secondary prevention

Deficiency Syndrome (AIDS), continence management, wound care, smoking cessation and Coronary Heart Disease (CHD).

Of these, Coronary Heart Disease is the major cause of illness and death in Western countries and this effect is likely to increase as the average age of the population rises. Consumers with established CHD are at the highest risk of

### Grades of Recommendation

These Grades of Recommendation have been based upon the JBI developed Grades of Effectiveness:

**Grade A:** Effectiveness established to a degree that merits application

**Grade B:** Effectiveness established to a degree that suggests application

**Grade C:** Effectiveness established to a degree that warrants consideration of applying the findings

**Grade D:** Effectiveness established to a limited degree

**Grade E:** Effectiveness not established

experiencing further coronary events. Lifestyle measures can contribute significantly to a reduction in cardiovascular mortality in established CHD.

Optimisation of the management of CHD is of prime concern in the current economic and socio-political climate. Improved management of cardiac risk factors by providing nurse-led services to divert patients from busy hospital and general practice settings has been suggested as one way of maintaining quality care in patients with established CHD.

## Definitions

For the purpose of this Best Practice Information Sheet the following definitions have been used.

### Coronary Heart Disease

Coronary Heart Disease is 'any disease of the coronary arteries; particularly atherosclerosis, which reduces the blood flow and hence the oxygen supply to the heart muscle'.

### General Health Status (SF-36)

This is a short form health survey with 36 items measuring the following eight domains of health: physical functioning, role limitation due to physical health problems, bodily pain, general health, energy and vitality, social functioning, mental health, and role limitations caused by mental health problems. Each domain is scored on a scale of 0 to 100, with 0 being the worst possible health status and 100 the best.

### Hospital Anxiety and Depression Scale (HADS)

This scale consists of 14 questions, 7 relating to depression and 7 to anxiety, with a possible score from 0 to 3 for each question. A maximum score of 42 is obtainable with the following scores indicating the level of anxiety and depression.

- 0-7 normal
- 8-10 borderline
- ≥11 anxiety and depression present

### Body Mass Index

Calculated as weight (in kilograms [kg]), divided by height (in metres [m]) squared. BMI is represented as kg/m<sup>2</sup>.

### Nurse-led Clinics

For the purpose of this information sheet nurse-led clinics are defined as clinics providing a service for the consumer, which is managed and staffed solely by nurses, with the ability to assess or treat and consult or refer the consumer to other health disciplines as required.

### Seattle Angina Questionnaire (SAQ)

This 19-item instrument is a quality of life measure related to cardiac disease. It quantifies physical limitation due to coronary artery disease, angina stability over the preceding month, frequency of angina symptoms, satisfaction with treatment for coronary artery disease, and patients' perceptions of how coronary disease limits the quality of their lives. Scores range from 0-100 and higher scores indicate a better level of functioning. It has been previously demonstrated that a change in SAQ scores between 5 and 8 points indicates a clinically significant change.

## Interventions

The interventions of interest were those related to the broad area of practice, incorporated within cardiac nurse-led clinics: education, assessment, consultation, referral, administrative structures or models. The primary outcomes of interest included: adverse events such as exacerbation of CHD symptoms, readmissions, admission rates, clinical effectiveness, cost effectiveness, consumer satisfaction and compliance.

### Education and Self Help

A randomised controlled trial (RCT) of general practitioner (GP) practices in the Northern United Kingdom compared a nurse-led educational session with a nurse-led, facilitated self-help program (Angina Plan). The 142 participants included had been diagnosed with angina and prescribed nitrates for the first time in the previous twelve months. Anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS) and quality of life using the Seattle Angina Questionnaire (SAQ). An angina diary was kept for a week, recording episodes of angina (including length and severity) and number of treatments with glyceryl trinitrate (GTN) required. Outcomes were assessed at the commencement of the study and at six months.

**Anxiety and depression** - There was a statistically significant reduction in depression for the patients in the self help group compared to the education session group (P= 0.013).

**Angina** – The angina diary demonstrated a statistically significant pattern of reduced angina attacks for the week in the self help group compared to the education session group (P=0.016), with a significant decrease in the amount of GTN required (P= 0.018). The results for angina stability, angina frequency, treatment satisfaction and disease perception were not statistically different. However, a statistically significant reduction in the physical limitations in the self help group compared to the education session group (P<0.001) was demonstrated.

**Lifestyle** - The study reported a significant number of the self help group made changes to their diet and increased their daily activity compared to the education session group (P<0.001).

## Education and Motivational Interview

An RCT conducted in Glasgow community practice clinics and patient's homes compared the use of usual care (not described) and shared care (nurse-led health education and motivational interviews according to individual need) for 98 patients awaiting coronary artery bypass grafting (CABG) surgery. Anxiety and depression were assessed using the HADS, and general health status using the SF-36. Other outcomes assessed were clinical measures of: blood pressure, plasma cholesterol, smoking status, obesity, and physical activity. Patient satisfaction was also evaluated with a self completed questionnaire. Outcomes were assessed prior to commencement of the study (baseline) and at admission to hospital for surgery (final).

**Anxiety and depression** - Anxiety levels at baseline were present in 39% of the usual care group and 45% of the nurse-led group; this had increased to 89% in the usual care group and statistically significantly improved to 4% in the nurse-led group at final assessment ( $P<0.000$ ). Depression levels were higher in the nurse-led group at baseline with 51% compared to 28% in the usual care group. The usual care group had an 85% increase in depression whilst the nurse-led group had a statistically significant reduction of 64% ( $P<0.000$ ).

**Blood pressure** - Mean systolic and diastolic blood pressures significantly reduced in the nurse-led group ( $P=0.000$  and  $P=0.048$  respectively). The nurse-led group had nearly a 10% improvement in the percentage of patients who were no longer hypertensive at final

assessment; whereas the number of participants in the usual care group exceeding the hypertensive target level increased to nearly 38%, again a statistically significant difference ( $P=0.000$ ).

**Cholesterol** - The mean total cholesterol concentrations significantly improved in the nurse-led group compared to the usual care group ( $P=0.003$ ).

**General health status** - Of the 8 domains, the physical role limitation was the most affected while waiting for CABG surgery, with the mental health domain the least affected. At the final assessment the usual care group's scores had deteriorated in every domain; whereas in comparison the nurse-led group's scores had all statistically significantly increased.

**Lifestyle** - A statistically higher smoking cessation rate was achieved, with smoking rates reducing by 25% in the nurse-led group compared to 2% in the usual care group ( $P=0.001$ ). There was an increase in the usual care group's body mass index of  $0.2 \text{ kg/m}^2$  in comparison to a reduction in the nurse-led group of  $1.0 \text{ kg/m}^2$ , ( $P=0.000$ ). The nurse-led group increased physical activity levels by 33% in comparison to the usual care group who reduced their activity by 16% ( $P=0.000$ ).

**Satisfaction** - Patients were satisfied with nurse-led care and reported that the program was supportive in making lifestyle changes such as, quitting smoking and changing their diet. It also reduced their own and their family's anxiety whilst increasing their knowledge about CHD risk factors and lifestyle.

## Audit and Recall

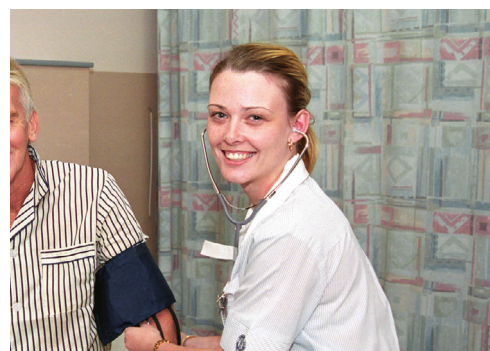
A cluster RCT of 1906 patients in Warwickshire compared interventions for improving secondary preventative care for patients aged between 55 and 75 with established CHD. Twenty-one general practices were divided into 3 groups (audit, general practitioner (GP) recall and nurse-led recall) and baseline data was measured. The audit group received feedback on adequacy of overall assessment including blood pressure, cholesterol and smoking status, which were reassessed at 18 months. The GP and nurse-led recall groups were informed as to which patients to recall.

**Blood pressure** - There were statistically significant differences ( $P<0.001$ ) in assessment of blood pressure favouring both the nurse-led recall group and GP recall group compared to the audit group.

**Cholesterol** - There were statistically significant differences ( $P<0.001$ ) in assessment of cholesterol levels favouring both the nurse-led recall group and GP recall group compared to the audit group.

**Lifestyle** - There were statistically significant differences ( $P<0.001$ ) in assessment of smoking status favouring the nurse-led recall group and GP recall group rather than the audit group.

**Adequacy of assessment** - At baseline approximately 30% of patients were adequately assessed, this improved significantly by follow-up ( $P<0.001$ ) to 52% for audit, 76% for GP recall and 85% for nurse-led recall. Statistically significant differences favoured both GP and nurse-led groups compared to the audit group ( $P<0.001$ ).



## Implications for Practice

Staffing with experienced Coronary Heart Disease nurses is suggested as the preferred model of care.

## Recommendations for Research

Further work needs to be done investing economic modelling of cardiac nurse-led clinics to identify their cost effectiveness.

### Secondary Prevention

#### Specialist cardiac nurses

In an RCT in Southampton, 597 patients from 67 stratified general practices, were randomised to either a GP attendance group or a program of secondary preventative care led by 3 specialist cardiac nurses (SCN). The main outcome measures were extent of follow-up; attendance for cardiac rehabilitation; medications prescribed on discharge from hospital; self-reported smoking, diet and exercise; and symptoms of chest pain and shortness of breath. Outcomes were assessed at 1, 4 and 12 months.

**Anxiety and depression** - There were no statistically significant differences between anxiety and depression scores.

**Angina** - The incidence of chest pain on exercise demonstrated a statistically significant decrease at the four-month assessment, favouring the SCN group (P=0.05).

**Blood pressure** - The percentage of patients with hypertension (diastolic >90mmHg and systolic >140mmHg) at baseline and final assessment were comparable between groups.

**Lifestyle** - A statistically significant improvement for both groups from baseline to one year assessment was found (P=0.05). At one month, more than 80% of participants reported eating healthy food. At twelve months this self reported intake of eating healthy food was higher in the SCN group, but not statistically significantly different between groups.

**Follow-up** - More patients in the SCN group had attended at least one rehabilitation session

compared to the GP group at the four-month assessment (P<0.001) and at one year this remained statistically significant in favour of the SCN group (P<0.001). At one year follow-up the number of consultations with the nurse was twice as high when compared with the GP group (P<0.001).

#### Nurse-led clinic

A cluster RCT in Scotland randomised 1173 participants with established CHD from 19 general practices to either usual care by GP or attendance at a nurse-led secondary prevention clinic. The outcomes assessed at baseline and one year, were general health using the SF-36, anxiety and depression using HADS, clinic attendance, hospital admissions and angina type specification.

**Anxiety and depression** - There was no statistically significant difference in mean HADS scores between groups.

**Angina** - The number of participants with worsening chest pain decreased in the nurse-led clinic group but increased in the usual care GP group (P=0.025).

**General health status** - All of the domains except for energy and vitality, and mental health had statistically significant changes from baseline to final assessment in favour of the nurse-led clinic.

**Follow-up** - The number of hospital admissions decreased in the nurse-led clinic group with an increase seen in the usual GP care group (P=0.003).

## Summary

**Anxiety and depression** - Hospital Anxiety and Depression Scale (HADS) scores demonstrated no statistically significant difference regarding the benefits of nurse-led care versus routine general practitioner (GP) care. However, the lack of statistical significance does suggest that nurse-led care is as beneficial as GP care.

**Angina** - All four studies reported beneficial effects from nurse-led clinics from the program, medication assessment or attendance at a clinic.

**Blood pressure** - No significant differences were found, however the results were favourable to nurse-led clinics.

**Cholesterol** - A significant reduction in cholesterol levels in favour of nurse-led clinics was found in comparison to a GP clinic whilst awaiting coronary artery bypass grafting (CABG).

**General health status** - The meta-analysis of the SF-36 scores in two papers demonstrated

statistically significant differences in favour of nurse-led care versus routine general practitioner care.

**Lifestyle** - Significant improvements in the amount of activity able to be undertaken were found in two studies. Contradictory results for smoking status were found with three studies comparing general practitioner and nurse-led clinics; two demonstrated significant improvements and one found no significant changes.

**Satisfaction** - High levels of satisfaction with nurse-led clinics were reported in one study however, no comparisons were made with general practitioner care.

**Follow-up** - An increase in follow-up for both a GP group and nurse-led group was found, as well as significant improvements in overall assessment. Contradictory results were found for admission rates.

## Discussion

The six included studies investigated interventions related to education, assessment, and consultations or follow-up. None of the papers addressed patient referrals, or reported rigorous methods of cost analysis. The interventions measured across all studies were primarily related to advice giving, referral, education, and models of primary health care delivery.

The impact of these interventions on patient outcomes varied, as did the outcome measures utilised across studies. Improvements were demonstrated in the outcomes of anxiety and depression, quality of life, general health and lifestyle. Beneficial effects attributable to nurse-led clinics were also identified for reduction in severity of angina, blood pressure, cholesterol levels, adherence to medication schedules, and lifestyle changes to decrease the severity of risk factors. Of these, only blood pressure and cholesterol were objectively measured. Subjective outcomes need to be considered with caution due to the limitations associated with self-reported outcomes. Other

outcomes addressed by individual papers but lacking complete data for analysis or reporting were adequacy of follow-up, admission rates and patient satisfaction or compliance.

Much of the data in the studies was not reported in raw format. The authors were able to be contacted in some cases and forwarded their raw data so that meta-analysis could be performed, enhancing the scope of the systematic review.

Many of the studies are based in the United Kingdom, where there is a high incidence of CHD; however, the care processes are no different in other Westernised countries and the outcomes were considered comparable.

The number of visits to nurses and GPs increased, however the number of admission rates decreased in some cases. The cost of care may have escalated, although reducing admissions would reduce the cost of care in the long term. As there were no papers that addressed cost-effectiveness or adverse events, conclusive results are unable to be reported.

# Recommendations

- The use of nurse-led clinics is recommended for patients with Coronary Heart Disease (Grade B)
- The use of nurse-led clinics may increase clinic attendance and follow-up rates (Grade B)
- Nurse-led clinics are recommended for patients who require lifestyle changes to decrease their risk of adverse outcomes associated with Coronary Heart Disease (Grade A).

## Conclusion

Minimal meta-analysis could be performed due to different interventions and outcome measures within each study; however, a brief summary of each outcome assessed by the individual studies was presented.

There were no negative outcomes for nurse-led clinics reported by any of the studies. Although not all outcomes were statistically significant, many of the studies reported improved clinical outcomes.

The objective of the systematic review was to ascertain whether or not nurse-led clinics would be an effective adjunct for patients with CHD to supplement general practitioner (GP) advice and care. With this in mind nurse-led clinics were favourable for some outcomes and as effective as GP clinics for other outcomes. This demonstrates that there may be value in allowing nurses to lead CHD clinics ensuring they are adequately trained and appropriate expectations of the clinic are clear.

### References

1. Page, T., Lockwood, C., Conroy-Hiller, T. 2005. Effectiveness of nurse-led cardiac clinics in adult patients with a diagnosis of coronary heart disease. *International Journal of Evidence-Based Healthcare* 3(1); 2-26.

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In addition this Best Practice Information Sheet has been peer reviewed by experts nominated by Joanna Briggs Institute collaborating centres.



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