

PRACTICE OBSERVED

Practice Research

Prevention of cardiovascular disease in general practice: a proposed model

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Abstract

A screening model based in general practice for the detection of subjects at risk of premature cardiovascular disease is described. Opportunistic screening is performed by a trained nurse who also gives initial advice on management. Immediate feedback to patients is possible since a rapid dry chemistry technique is used to measure blood cholesterol concentrations. The collation and analysis of data are achieved using a microcomputer. A central deidentified database is incorporated to allow epidemiological studies and intervention strategy evaluations to be made. Nineteen health centres have evaluated the model, and 40 000 subjects have been screened: 10% had diastolic blood pressures of over 95 mm Hg and 15% had a blood cholesterol concentration over 7 mmol/l (270 mg/100 ml) and 2% over 9 mmol/l (347 mg/100 ml). The initial data suggest that the model is acceptable to both health centre personnel and the general public and that the offer of screening is taken up by all elements of the target population.

Introduction

Coronary heart disease is the primary cause of death in industrialised countries, accounting for 27% of all mortality in England. It places a considerable burden on the resources of the primary health care system in Britain, which at present mainly treats established illness rather than prevents potential disease. Several major risk factors contribute to the development of premature cardiovascular disease such as hypertension, hypercholesterolaemia, smoking, and a positive family history. Furthermore, most of these risk factors may be enhanced or diminished by variations in lifestyle. Indeed, the general public is becoming aware of this and is seeking help to reduce cardiovascular disease. Although controversy exists as to the best strategy for minimising the risk factors, there is agreement that they should be tackled in the primary health care setting. Some favour a population approach, whereas others favour the identification and treatment of individuals at high risk. These approaches need not be mutually exclusive, but their respective merits have yet to be evaluated. Compliance is no longer tenable, and a more determined effort is needed.^{1,2}

There are two accepted ways of identifying those who are at greatest risk of heart disease: screening an entire population (call recall) or selective opportunistic screening (case finding). We describe a model which uses the opportunistic approach. It has two aims: (a) To find the subjects at high risk from cardiovascular disease. (b) To study the effectiveness of intervention treatment programmes in reducing risk factors. In addition, although the model we propose concerns cardiovascular disease, it may be adapted to confront other conditions that are related to lifestyle.

Method

The model is designed to be used in large health centres (fig 1). A room is set aside which accommodates a specially trained nurse and equipment. Screening takes place during normal surgery hours and overall is coordinated

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by one general practitioner. This model was initially tested in Peterhead Health Centre, before being used in a further 18 health centres throughout the United Kingdom.

Patients aged between 20 and 59 years are recruited by a direct referral from a doctor during a consultation, or direct referral from other staff in the health centre, or self-referral in response to written publicity such as leaflets and posters, or self-referral in response to a recommendation from patients who have attended the screening.

It was intended that (a) should be the primary method of recruitment, the others becoming more important with time. Each doctor attempts to refer two or three patients from a surgery session to provide the nurse with an adequate number of subjects. The doctor gives the patient an invitation on a card that briefly describes the programme. Subjects are encouraged to attend before leaving the surgery. If unable to do this they are offered an appointment at a future date. Cards with a similar message are issued to other members of the primary health care team—for example, receptionists, health visitors,

160–200 mm Hg, plasma cholesterol > 7.0 or 9 mmol/l (270–444 mg/100 ml) are given appropriate advice and asked to return in three weeks for further assessment.

At the end of the interview the patient is given a leaflet which describes the aims of the programme. The nurse produces a summary, printed for each patient, which is added to the patient's medical record. This report includes a coronary risk score which provides an overall assessment of the patient's likelihood of developing heart disease.

FOLLOW-UP

If on the return visit the patient shows no improvement in the risk profile he or she is referred to the general practitioner for assessment, which entails a re-interview, advice on diet and a further assessment after a suitable interval.

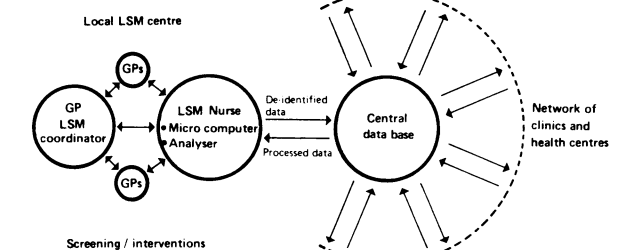


FIG. 1—The lifestyle management LSM model.

and other nursing staff who also participate in patient recruitment. The case records of patients who have been screened are annotated with a coloured sticker.

INTERVIEW

The patient is welcomed, put at ease, and offered further information on the purpose of the screening clinic. A standard questionnaire is administered and the responses recorded directly into a microcomputer. Note is taken of the patient's smoking habit, alcohol consumption, family history of premature coronary heart disease, and details of occupation and educational attainment. The patient is examined for corneal arcus and xanthomata, both of which may indicate lipid abnormalities. The following measurements are then recorded: blood pressure (seated, supported arm, diastolic phase V, using a standard mercury sphygmomanometer), height (cm), and body weight (kg). A capillary blood sample is obtained by finger prick (Autocore, Boehringer Corporation, Lewes, UK Ltd) and an aliquot of 32 μ l used to measure plasma cholesterol concentration (Reflothin, Boehringer Corporation).

All of the procedures can be accomplished within 10 minutes. The nurse then discusses the findings with the patient and offers specific advice, using material from the Health Education Council and diet sheets. The advice that she gives reflects health centre policy and practice.

If a patient presents with severely raised blood pressure (diastolic > 120 mm Hg, systolic > 200 mm Hg) or with a cholesterol concentration greater than 9 mmol/l (347 mg/100 ml) the patient is referred immediately to his or her general practitioner. Patients who have smaller increments in blood pressure and cholesterol concentration (diastolic 95–120 mm Hg, systolic

At this stage drug treatment is considered if the patient proves to be refractory. Standardised protocols for the follow-up of patients who are hypercholesterolaemic are 20–99 μ mol/l (270 mg/100 ml) 40–49 μ mol/l (290 mg/100 ml) and 50–59 μ mol/l (309 mg/100 ml) and where a hypertensive have been developed for the use of the nurse and the patient's doctor.

To assess the long-term effectiveness of the programme all patients who initially show abnormal blood pressure or cholesterol concentrations are followed up regularly. They are given a small patient record booklet that is annotated with personal results and a risk score profile. This is updated at each follow-up visit. The computer file is used to recall patients for follow-up and enables the nurse to monitor default.

RISK SCORE

Epidemiological studies have linked several factors to the premature development of coronary artery disease, and these may be used to formulate a cardiovascular risk score. Such a score allows the patient to be viewed holistically. The three primary risk factors are smoking, hypertension, and raised cholesterol concentration, and in our model these have been combined with a family history of premature coronary heart disease, sex, and obesity. Each parameter is assigned a graded numerical value on the basis of excess risk (fig 2).

The scoring system is a synthesis of information on coronary risk culled from the NHLBI heart disease epidemiological study in Framingham,³ the Pooling project,⁴ and the report of the working group on arteriosclerosis of the NHLBI.⁵ These clearly identify the relation between smoking, cholesterol concentration, and blood pressure levels and their contribution

