

## Foreword

The Report of the Cardiovascular Health Strategy Group (1999) "Building Healthier Hearts" made recommendations for the detection of high risk patients and risk reduction through provision of effective treatments to ensure best survival and quality of life outcomes.

It is in this context that the National Programme in General Practice for the Secondary Prevention of Cardiovascular Disease, known as Heartwatch, is implementing many of the significant primary care recommendations of the national cardiovascular health strategy.

Already some 10,500 patients who have been recruited to the programme have benefited from a significant improvement in health care delivery in the primary care setting. The clinical improvements shown in this initial report have come about as a direct result of the close collaboration between all elements of the healthcare team and the major stakeholders, both regionally and nationally.

With the establishment of significant infrastructures at national, regional and local practice level, primary care in Ireland has demonstrated its capacity to embrace significant change and implement 'state of the art' medical practice. Already within this implementation phase of the programme, the largest database on cardiovascular disease in primary care in Ireland has been established, with information on over 40,000 patient consultations documented. This information will be used in the future in the areas of audit, epidemiology and population health, resource planning and delivery.

I am pleased to present to the Minister of State, Department of Health and Children, Mr Sean Power TD, the initial Clinical Data Report from the Heartwatch Programme, which provides an insight into the operation of the programme and a statistical analysis of early clinical findings.



**Professor John Feely**

*Chair, Heartwatch National Steering Committee*



**Professor John Feely**

## Acknowledgements

The Heartwatch Programme is being undertaken by The Department of Health & Children and the Health Boards in partnership with the Irish College of General Practitioners and the Irish Heart Foundation.

We wish to thank the members of the National Steering Committee and Data Management Committee who oversee the programme at a national level.

The National Programme Centre and Independent National Data Centre staff are to be thanked for their commitment to the task. We are indebted to Mr Fionán Ó'Cuinneagáin, CEO of ICGP and Dr Michael Boland, Director, ICGP Postgraduate Resource Centre and all the GP coordinators and GP IT tutors.

All of the Health Boards have enthusiastically supported the programme and special thanks to the Nurse Facilitators, Cardiovascular Project Directors, Primary Care Unit Managers and other Health Board team members.

The analysis of our data is crucial to the success of the programme and we thank Dr Claire Collins, Social Clinical and Research Consultants for this.

Thanks also to the GMS Payments Board, the Office of the Data Protection Commissioner, Ward Solutions and the Irish Healthcare Informatics Vendors Association for their continuing support and advice.

The most important people in a programme such as this are the patients and we are grateful to the General Practitioners and their Practice Nurses who have identified and recruited these patients and have persevered with the tremendous change management required to establish a national programme such as this.

Finally, a special word of thanks to Mr Chris Fitzgerald and the staff of the Health Promotion Unit of the Department of Health and Children and to Dr Emer Shelley, Chair of the National Advisory Forum of the Cardiovascular Strategy.



Dr Sean McGuire



Mr John Leahy



Dr Brian Meade

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# Executive Summary

## Section 1 – Introduction & Background

### Introduction

The implementation of Heartwatch involves the evaluation of this first phase of a structured programme of secondary prevention of cardiovascular disease in general practice in Ireland.

The overall aim of the programme is to reduce morbidity and mortality due to cardiovascular disease.

The interim objectives of the programme are:

- To examine the baseline levels of risk factors and therapeutic interventions relevant to secondary prevention and their trends over time.
- To examine the processes involved in implementing the programme including the referral process and patient retention.
- To record the incidence of cardiovascular events in patients participating in the programme.

### Background

The Heartwatch Programme has been agreed by the Department of Health and Children, the Health Boards and the Irish College of General Practitioners in collaboration with the Irish Heart Foundation and is implementing secondary care recommendations of the report of the Cardiovascular Strategy Group, 'Building Healthier Hearts'<sup>3</sup>

### Programme Description

Heartwatch is a national programme in general practice in association with other primary care professionals for the secondary prevention of cardiovascular disease in Ireland in patients with a history of Proven Myocardial Infarction (MI), Coronary Artery Bypass Graft (CABG), or Percutaneous Transluminal Coronary Angioplasty (PTCA). Diabetes patients from the Midland Health Board's Diabetes Structured Care Programme are also being included under the Heartwatch Programme. The programme targets 20% of Irish General Practice and implements the guidelines devised by the Second Joint Task Force of European and other Societies on Coronary Prevention. Patients are seen on a quarterly basis and care is implemented according to defined clinical protocols.

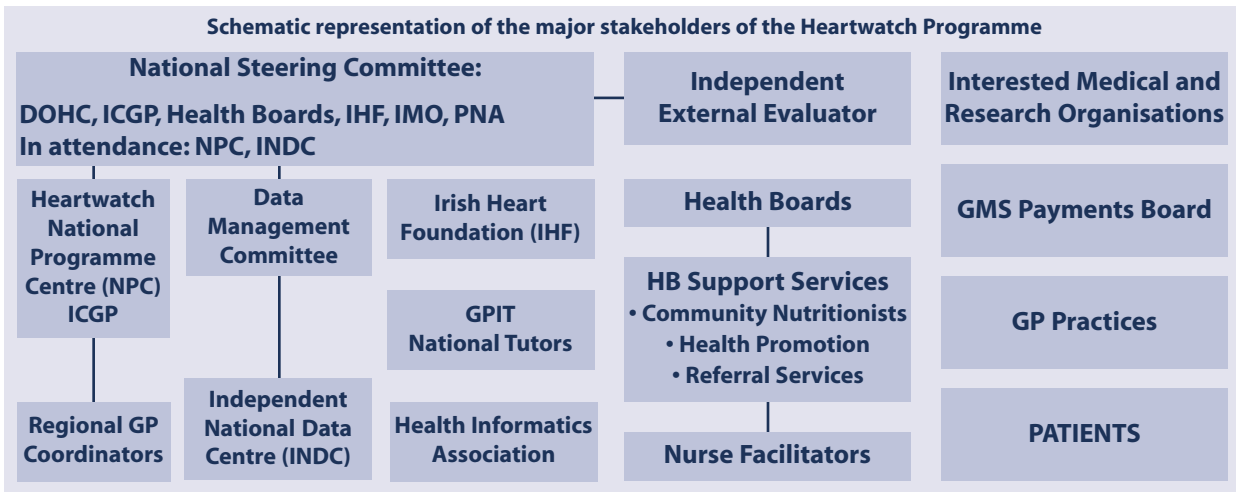
### The Continuing Care Protocol

Data on 90% of patients and quarterly continuing care visits as per the established protocol is sent electronically from the practice to a newly established Independent National Data Centre. 10% of practices return data via paper returns.

### Heartwatch Structures

A National Programme Centre, Independent National Data Centre and National and regional infrastructures and processes have been established to implement and manage the Heartwatch Programme.

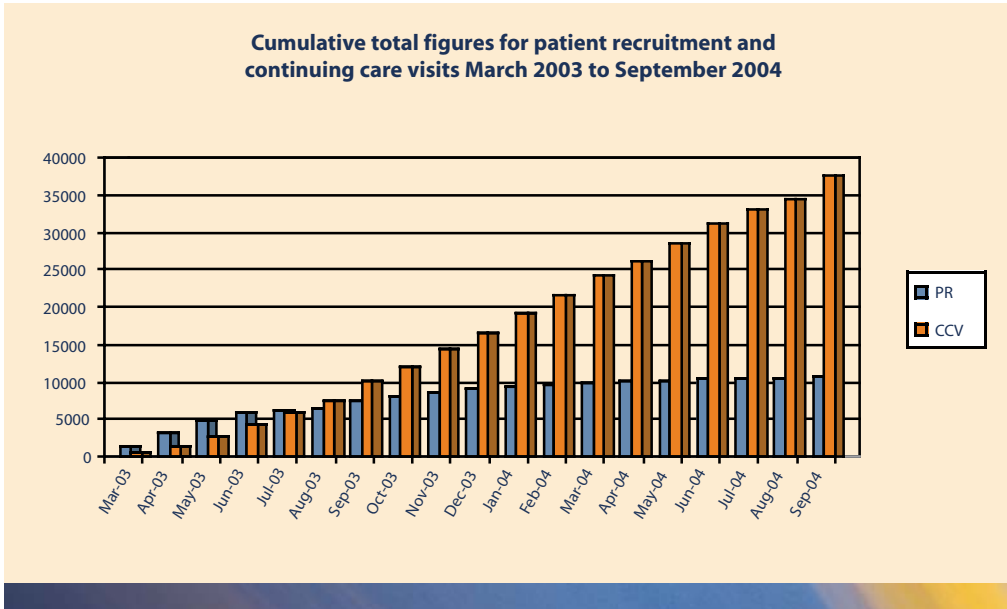
Figure 1.1



## Data on Patient Care

There are now in excess of 10,500 patients in the programme and 40,000 continuing care visits have taken place.

Figure 1.2



## Linkages with other Projects

The Heartwatch Programme has been involved with a number of other cardiovascular and primary care projects:

- Midland Health Board Diabetes Programme
- SPHERE Project
- RHASP Project
- Child Health Surveillance Project, ICGP/NWHB.

## Reliability and Validity of Data

Under the direction of the Data Management Committee, the data collection, cleaning and analysis processes were independently quality assured during 2004, and it was found that *"The post-cleaned data is of a high quality and allows national and health board level analysis to a high level of statistical reliability."*

## Change Management Benefits

### • ICT & Change Management

This programme has involved considerable change management within general practice which will have far reaching benefits in many areas other than coronary heart disease prevention.

### • General Practice

The gains to General Practice include a more efficient and effective management of patient care with the benefits of individual practice feedback on this management, from the data findings now available from the INDC.

### • VFM Potential

There is substantial potential in capitalising on the economy of scale benefits to establish other healthcare programmes and projects which also necessitate reliable and valid data capture from General Practice or other healthcare settings.

## Evaluation of the Programme

The Programme Evaluation process has been approved by the National Steering Committee and commenced in late July 2004. The overall aim of this evaluation is to assess the Heartwatch programme in achieving its specific objectives as outlined and to make recommendations for its effective and efficient continuation. The five main areas for review are:

**1. Structures, Processes and Administration**

**2. Patients and other Stakeholders**

**3. Database and its Management**

**4. Value for Money and Governance Issues**

**5. Recommendations for the Future**

The evaluation is due to be completed by the end of 2004.

## Future Plans

The Heartwatch Programme is now fully functioning with all key personnel and processes in place. An unprecedented bank of data is now being accumulated with information on in excess of 40,000 patient visits already audited and under analysis.

It is suggested that this programme is the template for the future management of chronic illness in primary care and following evaluation serious consideration should now be given to the expansion of the programme to also incorporate high risk primary prevention as a key aim for the future.

## Section 2 - Clinical Data Analysis

### March 2003 to April 2004

- The data presented in this report is for the first year of the programme to the end of April 2004. In total 10,041 patients were registered into the Heartwatch programme in this period and data on continuing care visits was returned for 9,540 patients. These patients attended a total of 26,196 Heartwatch visits to the end of April 2004.
- Registration details demonstrate that:
  - Almost three-quarters of patients are male (73.5%)
  - Less than one-fifth are aged under 55 years (14.6%)
  - Almost three-quarters (73.1%) of patients had a medical card
  - Over one half of patients had no significant family history of cardiovascular disease.
- Looking at patients who attended four visits, statistically significant improvement in the control of identified risk factors as evidenced by a reduction in the proportion of patients outside the target measurements set by the programme occurred in the areas of:
  - Systolic and diastolic blood pressure
  - Total and LDL cholesterol
  - Smoking.
- Substantial numbers of patients had their medications changed at their first Heartwatch visit ranging from 4% of those on aspirin to 55% of those on fibrate.
- 177 new cases of diabetes (1.8% of all Heartwatch patients) were identified.
- No significant improvements were observed in respect of body mass index and waist circumference.
- 30.9% of patients were referred to a dietician.
- Attendance in respect of OT, smoking cessation and exercise were low.

### Inclusion Criteria

- Over half of patients (54.3%) had suffered an Acute Myocardial Infarction (AMI).

- 38.4% of males had undergone Coronary Artery Bypass Grafting (CABG)
- Compared to 24.9% of females
- 16.9% of females had undergone Percutaneous Transluminal Coronary Angioplasty (PTCA) compared to 7% of males.

### Family History

- Over one half (54.5%) of patients had no significant family history of cardiovascular disease.
- 24.3% had a first degree male relative <55 years who had died from cardiovascular disease.
- 15.8% had a first degree female relative <65 years who had died from cardiovascular disease.
- 5.5% had both a first degree male relative <55 years and a first degree female relative <65 years who had died from cardiovascular disease.

### Modification of Risk Factors

All patients who attended four visits were looked at and changes over time within this group of patients were compared to assess the change in the proportion of patients outside target (i.e. not ideally controlled) for the various identified risk factors.

Statistically significant improvement as indicated by a reduction in the percentage of patients outside target was seen in:

- Systolic Blood Pressure decreasing from 44.9% at first visit to 41.2% at fourth visit.
- Diastolic Blood Pressure decreasing from 13.6% at first visit to 10.1% at fourth visit.
- Total Cholesterol decreasing from 35.8% at first visit to 29.6% at the fourth visit.
- LDL (Low Density Lipoprotein) Cholesterol decreasing from 33% at the first visit to 29.4% at the fourth visit.
- Smoking with the proportion of patients smoking decreasing from 13.9% at the first visit to 12.1% at the fourth visit.



Although the proportion of diabetic patients with HbA1c (indicator of glucose control) < 6.5% was not shown to vary significantly, the proportion of diabetic patients with a HbA1c  $\geq$ 7.5% (which is the group of patients at highest risk of cardiovascular disease) decreased across each visit.

No statistically significant improvement was achieved in the areas of Body Mass Index (BMI) and waist circumference (indicator of central obesity).

Statistically significant disimprovement was shown in the area of physical activity with an increase over the course of the programme from 62.8% at the first visit to 65% at the fourth visit. The reliability of the measurement of physical activity in minutes per week is however, questionable.

## Medication Usage

- Substantial numbers of patients required a change in their medication at their first Heartwatch visit ranging from 4% of those on aspirin to 55% of those on fibrate.
- 73.6% of patients were on some lipid lowering medication by the first Heartwatch visit and this had increased to 84.1% at the fourth visit.
- The proportion of diabetics at the first visit on lipid lowering medication was 71.2%, increasing to 77.2% of diabetics at the fourth visit.
- The majority of patients (87.8%) were on aspirin, anti-coagulant or anti-platelet medication by the first Heartwatch visit and this had increased at the fourth visit to 96.0%.
- The proportion of diabetic patients on an ACE inhibitor

or ATII inhibitor increased from 62% at the first visit to 69% at the fourth visit.

- Almost one fifth (19.3%) of patients who were outside target for systolic or diastolic blood pressure had their blood pressure medication altered at their first Heartwatch visit.
- Anti-smoking medication was prescribed at some time over the first four visits to a total of 14.7% of smokers.
- Weight reduction medication was prescribed at some time over the first four visits to 1.8% of patients who were outside target that is  $\geq$ 25, for BMI.

## Referrals

- Almost one-third (30.9%) of all patients were referred to a dietician.
- 16.5% of smokers at first visit were referred to a smoking cessation officer at some point during their first four visits.
- 4.6% of all patients were referred to an exercise officer.
- Over one-in-ten (11.5%; n=82) of the patients who experienced an event\* in this time-period died as a result, of which 41.5% were as a result of a cardiac arrest.

\* Note this was the number of events reported on the online system – this may underestimate the number of actual events for two reasons – (a) GPs/Practice Nurses may not be aware of events unless informed by the patient and (b) event returns were not remunerated and hence there may not be an incentive to report same.

## Section 3 – Discussion & Findings

This chapter discussed the findings from the clinical analyses outlined in Chapter 2 and also compares these figures with data published in 2002 by Feely et al.<sup>6</sup>

- The Heartwatch Programme sets out to tackle the problem of Cardiovascular Disease in Ireland by establishing a strategic national approach to the implementation of internationally recognized cardiovascular prevention guidelines ('Prevention of Coronary Disease in Clinical Practice 1998' Second Joint Task Force of European and other Societies on Coronary Prevention.).<sup>4</sup>
- Ireland is now leading the way in Europe, as such an innovative and comprehensive national approach to the prevention of Cardiovascular Disease has not been previously adopted.

This first tranche of data from the Heartwatch Programme firmly establishes the necessity for a national strategic approach towards the control of cardiovascular disease in Ireland as the Heartwatch Programme demonstrates that significant numbers of patients were poorly controlled at their first visit.

Table 3.1 shows the percentage of patients whose risk factors were outside the ideal targets as laid down in the

document 'Prevention of Coronary Disease in Clinical Practice 1998'<sup>4</sup> when they attended for their first Heartwatch Visit.

- The achievement of significant change in this group of patients will take some time. However, patients involved in the Heartwatch Programme are already showing significant improvement in the control of certain risk factors.
- One of the interesting findings to date is the apparent gender difference in the diagnosis and management of Coronary Heart Disease. The data indicates poorer control of modifiable risk factors in females versus males in the areas of Systolic Blood Pressure and Total Cholesterol. Currently only 26.5% of the patients in the programme are female. Gender issues in coronary heart disease are complex<sup>7,8</sup> and further analysis will be required.
- Another significant finding is the poor control of Diabetes in this population as evidenced by the HbA1c (Glycosylated Haemoglobin) levels which is the generally accepted indicator of glucose level control in Diabetics.<sup>9</sup> However, significant improvement in control occurred in the patients with a HbA1c level greater than 7.5% who are recognised to be the patients at greatest risk of a cardiovascular event.

Table 3.1 Percentage of patients outside target at first Heartwatch visit.

Risk Factor	Target	% Outside Target
Systolic BP	< 140	44.4%
Diastolic BP	<90	15.1%
Smoking Males	0	15.9%
Smoking Females	0	15.3%
Total Cholesterol	<5 mmol/l	37.5%
LDL Cholesterol	<3 mmol/l	37.8%
HDL Cholesterol	>1 mmol/l	35.9%
Triglycerides	< 2 mmol/l	53.15
Body Mass Index	<25 Kg/m <sup>2</sup>	76.6%
Waist Circumference	<94cms (male) <80cms (female)	92.4%
Physical Activity	>210 mins/week	67%

- A number of new diabetics (1.8% of cohort) were diagnosed in the course of patients first four visits which again demonstrates one of the many benefits of monitoring this high risk population.
- “Current data on morbidity from Cardiovascular Disease in Ireland are limited both by their lack of coverage of key areas such as General Practice and by the quantity quality and accessibility of the data recorded”<sup>1</sup> Hence, As the Heartwatch database grows it will prove to be an

invaluable resource.

After reviewing the data from patients who have attended for just the initial four visits, the need for the strategic approach being implemented in the Heartwatch Programme and the benefits which can be achieved at such an early stage in the life of the programme are clearly demonstrated. Inevitably, this leads to the strong desire for this programme to be extended to the whole population.

# Section 1 – Introduction and Background to the Heartwatch Programme

## Introduction

Ireland has the highest mortality rate from Ischaemic Heart Disease (IHD) in males and the third highest rate in females in the European Union<sup>1</sup>.

Heartwatch commenced within Primary Care in 2003 in an attempt to reduce the morbidity and mortality of patients of the programme.

The rationale for an active approach to the prevention of cardiovascular disease (CVD) is firmly based on five observations:<sup>2</sup>

- CVD is the major cause of premature death in most European populations; it is an important source of disability and contributes in large part to the escalating costs of health care
- The underlying pathology is usually atherosclerosis, which develops insidiously over many years and is usually advanced by the time symptoms occur
- Death, myocardial infarction and stroke nevertheless frequently occur suddenly and before medical care is available, and many therapeutic interventions are therefore inapplicable or palliative
- The mass occurrence of CVD relates strongly to lifestyles and modifiable physiological factors
- Risk factor modifications have been unequivocally shown to reduce mortality and morbidity, especially in people with either unrecognised or recognised CVD

The implementation of Heartwatch involves the evaluation of this first phase of a structured programme of secondary prevention of cardiovascular disease in general practice in Ireland.

The overall aim of the programme is to reduce morbidity and mortality due to cardiovascular disease.

The interim objectives of the programme are:

- To examine the baseline levels of risk factors and therapeutic interventions relevant to secondary prevention and their trends over time.
- To examine the processes involved in implementing the

programme including the referral process and patient retention.

- To record the incidence of cardiovascular events in patients participating in the programme.

## Background to the Heartwatch Programme

The Heartwatch Programme has been agreed by the Department of Health and Children, the Health Boards and the Irish College of General Practitioners in collaboration with the Irish Heart Foundation and is the culmination of several years of preparatory work. The initial implementation phase focuses on secondary prevention amongst those with significant proven cardiovascular disease. This is in line with the report of the Cardiovascular Strategy Group, 'Building Healthier Hearts'<sup>3</sup> which recommends (R6.21) that secondary prevention for most patients with cardiovascular disease should be provided in the general practice setting and goes on to state (Implementation 16.3) "the Department of Health and Children, the Irish College of General Practitioners and other relevant organisations should agree and implement a scheme for secondary prevention in patients with cardiovascular disease or diabetes."

## Initial Phase

The initial phase is to implement a programme in a sample (20%) of general practices for the continuing care, including secondary prevention, of patients who have had a myocardial infarction, coronary intervention or surgery.

The programme employs a standardised approach as called for in the National Strategy and adheres to internationally recognised cardiovascular prevention guidelines ('Prevention of Coronary Disease in Clinical Practice 1998', Second Joint Task Force of European and other Societies on Coronary Prevention).<sup>4</sup>

Diabetes patients from the Midland Health Board's Diabetes Structured Care Programme are also being included under the Heartwatch Programme.

## Programme Description

Heartwatch is a national programme in general practice for the secondary prevention of cardiovascular disease in Ireland in patients with a history of Proven Myocardial Infarction (MI), Coronary Artery Bypass Graft (CABG), or Percutaneous Transluminal Coronary Angioplasty (PTCA). Diabetes patients from the Midland Health Board's Diabetes Structured Care Programme are also being included under the Heartwatch Programme. The programme targets 20% of Irish General Practice and implements the guidelines devised by the Second Joint Task Force of European and other Societies on Coronary Prevention.

Patients are seen on a quarterly basis and care is implemented according to defined clinical protocols.

### The Aim of Continuing Care is:

- To encourage the patient to lead as full and active a life as possible.
- To record the current status of the patient in respect of the key risk factors of smoking, blood pressure, lipids, BMI and waist circumference.
- To review the other lifestyle issues of diet and exercise.
- To record the adequacy of diabetic control where appropriate.
- To review current medication, compliance and the need to prescribe.
- To intervene as appropriate or arrange referral for intervention by other specialist services based in the practice, the hospital or the community.

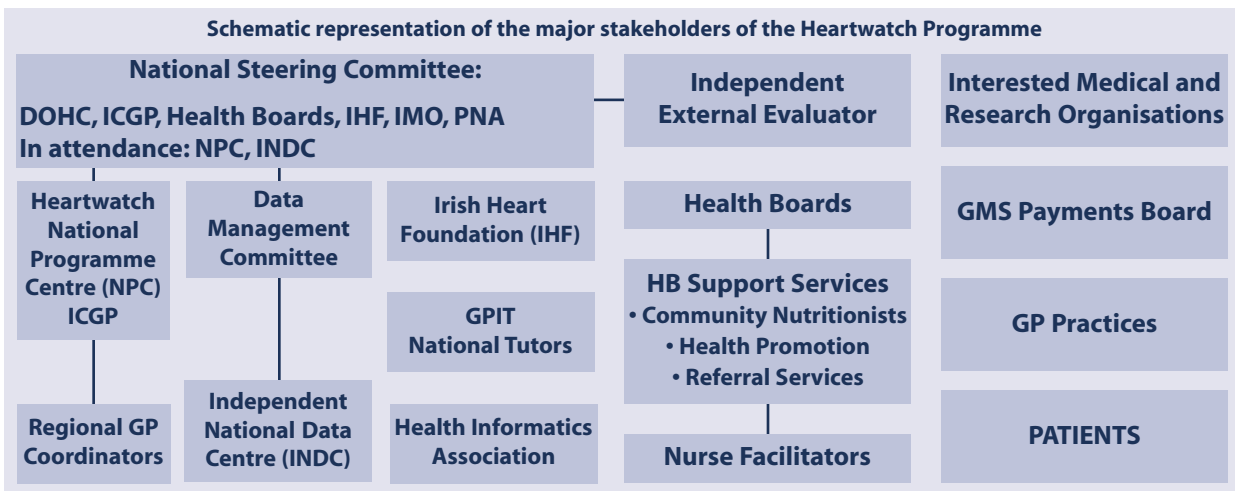
Data on 90% of patients and quarterly continuing care visits is sent electronically from the practice to a newly established Independent National Data Centre. 10% of practices return data via paper returns. A National Programme Centre and regional infrastructures and processes have been established to implement and manage the Heartwatch Programme.

## The Continuing Care Protocol

The Programme provides a protocol for the continuing care of eligible patients including a schedule of four visits per annum initially, and details of the risk factors to be measured with target levels of control to be achieved.

## Heartwatch Structures

Figure 1.1



### • National Steering Committee

The National Steering Committee oversees the implementation of the Heartwatch Programme and is chaired by Professor John Feely, Dept. of Pharmacology and Therapeutics, Trinity College. This committee is made

up of representatives of all of the major stakeholders which includes, the Department of Health and Children, the Health Boards, the Irish College of General Practitioners, the Irish Heart Foundation, the Irish Medical Organisation and the Irish Practice Nurse Association.

- **Data Management Committee**

The Data Management Committee is chaired by Professor Jane Grimson, Health Informatics, Trinity College. This committee oversees the activities of the INDC and reports to the National Steering Committee. Demographic and clinical reports are produced on approval by this committee.

- **National Programme Centre (NPC)**
- **Independent National Data Centre (INDC)**

The National Programme Centre, located at Cumberland Street, Dublin 2, has been set up to implement Heartwatch. An Independent Data Centre has also been established which receives the data from the participant GP practices and distributes aggregated anonymised relevant data reports to applicant agencies and organisations which have been approved by the Data Management Committee.

Patient and GP confidentiality is maintained throughout the Heartwatch Programme.

- **GP Coordinators & Nurse Facilitators**

There is a GP Coordinator (GPC) and Nurse Facilitator (NF) based in each Health Board Region.

The GP Coordinator is contracted by the National Programme Centre and works closely with the fulltime Nurse Facilitator who is employed by each Health Board and together they provide valuable support and assistance to each Heartwatch Practice on a local regional level. The GP Coordinator and Nurse Facilitator exchange valuable feedback with the National Programme Centre and conduct local training and feedback sessions with the Heartwatch GPs and Practice Nurses.

- **The Irish Heart Foundation**

The Irish Heart Foundation was responsible for initial nurse training and also for the production and distribution of Health Promotion Literature Packs to each Health Board region. The Irish Heart Foundation also conducted the first intensive Heartwatch training course

for Nurse Facilitators in 2003.

- **GMS Payments Board**

Payments to GPs are currently being issued by the GMS Payments Board on a monthly basis, based on detailed information provided by the INDC.

- **Health Boards**

The health boards are actively involved in all aspects of this programme. Many Health boards have set up specific secondary prevention teams who meet regularly with the Heartwatch Nurse Facilitator and GP Coordinator to progress the various aspects of the programme. The availability of services such as dietitians, smoking cessation officers and physical activity officers to the patients enrolled in Heartwatch, have been increased.

- **Health Informatics Association - Software Suppliers**

The four main software suppliers have formed a Health Informatics Association and each of these providers have made available a Heartwatch System Module for GP users to integrate with their current practice software. The software module of the two major providers became fully functional at the end of October 2003 with the remaining modules transferring data by February 2004. Other practices utilise the interim Heartwatch software commissioned for the programme by the INDC.

## Data on Patient Care

Since the first data returns were returned to the Independent National Data Centre, there has been a steady growth in patient recruitment and continuing care visits nationally. This has been against a background of IT development challenges and from a General Practice viewpoint it has involved a significant period of change management in terms of processes, time allocation and IT training and awareness. There are now in excess of 10,500 patients in the programme and 40,000 continuing care visits have taken place.

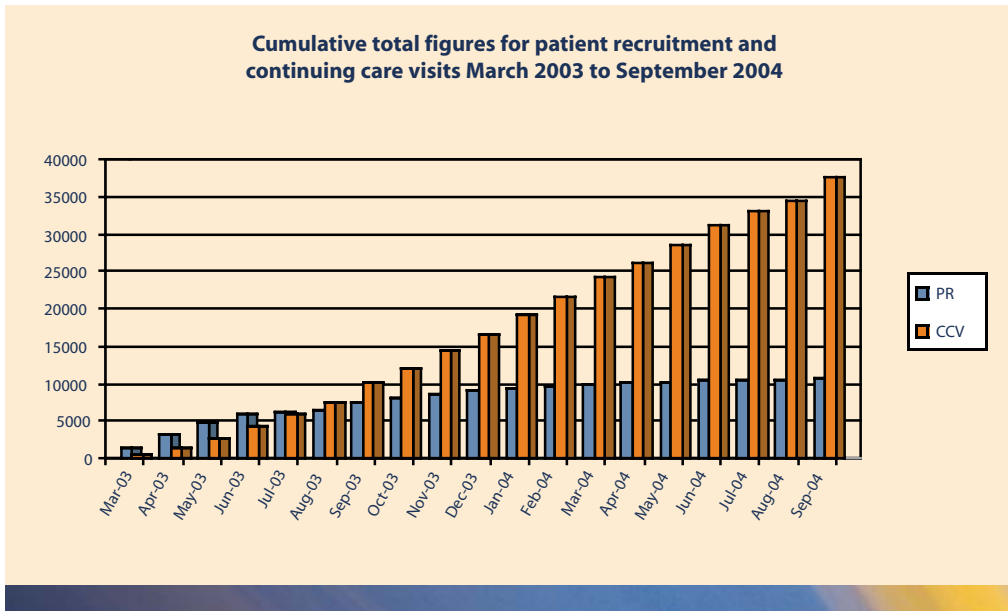
2003	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
PR	1210	3302	4795	5759	6262	6470	7433	7983	8557	9159
CCV	534	1327	2644	4314	5960	7451	10133	12088	14513	16642

\*PR = Patient Registration \*CCV = Continuing Care Visit.

2004	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04
PR	9400	9679	9819	10042	10180	10341	10484	10528	10670
CCV	19306	21600	24200	26215	28567	31083	33113	34391	37510

\*PR = Patient Registration \*CCV = Continuing Care Visit.

Figure 1.2



The clinical findings in relation to patient care are discussed in detail in the following two sections – Section 2 & 3.

## Linkages with other Projects

The Heartwatch Programme has been involved with a number of other cardiovascular and primary care projects:

- Midland Health Board Diabetes Programme
- SPHERE Project
- RHASP Project
- Child Health Surveillance Project, ICGP/NWHB

## Reliability and Validity of Data

Under the direction of the Data Management Committee, Social and Clinical Research Consultants (SCRC) were contracted early in 2004 to independently quality assure the data collection, cleaning and analysis processes conducted within the Independent National Data Centre and to advise and assist with the completion of the automation of data cleaning and further development of

data analysis.

This comprehensive work was conducted over a period of months and the following is the quoted summary taken from the final SCRC report:

*“The Heartwatch database contains a wealth of data which permits both cross-sectional and longitudinal analysis. It constitutes a large database, implemented and collected in a general practice setting, which indicates what is achievable in this respect. The post-cleaned data is of a high quality and allows national and health board level analysis to a high level of statistical reliability.”*

## Change Management Benefits

### ICT & Change Management

Information technology use by Irish General Practitioners has grown steadily from 34% in 1996 to 83% in 2003. 90% of the data collected in the programme is by electronic

means. Electronic data collection has proven to provide cleaner data as users are restricted in the type, format and quality of data that they can return.

Implementing an ICT based programme of this nature for the first time has yielded many valuable lessons both for the practices involved and those involved in the management of the programme.

Among the issues faced were an underestimation of the ICT costs, the challenges of dealing with a number of software providers, the paucity of ICT knowledge and support within practices, and reluctance by GPs to use the Internet due to a fear of computer viruses.

This programme has involved considerable change management within general practice which will have far reaching benefits in many areas other than coronary heart disease prevention.

### **General Practice**

The gains to General Practice include a more efficient and effective management of patient care with the benefits of individual practice feedback on this management, from the data findings now available from the INDC.

The experience and learning from the managed care and ICT dynamics of this programme will also benefit practices greatly, in terms of future structured care programmes and ICT oriented initiatives. The INDC system now includes online detailed clinical patient feedback to each individual participant GP.

The practices involved have now established a comprehensive coronary heart disease register and have developed detailed knowledge of the management of such patients.

It is envisaged that information and analysis extrapolated from the data now available will assist in service planning, for support and allied health services such as Laboratory Services and Health Promotion and Acute Hospital based services as appropriate.

### **VFM Potential**

The programme is now fully established, complete with the necessary infrastructures – ICT, customer care, an

Independent Data Centre, and valuable programme implementation learning has been achieved. There has been substantial interest in the potential value for money benefits of capitalising on this established framework and infrastructures with a view to utilising the economy of scale benefits to establish other healthcare programmes and projects which also necessitate reliable and valid data capture from General Practice or other healthcare settings.

## **Evaluation of the Programme**

A detailed proposal for the external independent evaluation of the programme has been approved by the National Steering Committee. This evaluation process commenced in late July 2004, and is expected to be finalised by the end of the year.

The overall aim of this evaluation is to assess the Heartwatch programme in achieving its specific objectives as outlined and to make recommendations for its effective and efficient continuation.

The Programme Evaluation has been divided into five main areas for review:

1. Structures, Processes and Administration
2. Patients and other Stakeholders
3. Database and its Management
4. Value for Money and Governance Issues
5. Recommendations for the Future

## **Future Plans**

The Heartwatch Programme is now fully functioning with all key personnel and processes in place. An unprecedented bank of data is now being accumulated with information on in excess of 40,000 patient visits already audited and under analysis.

It is suggested that this programme is the template for the future management of chronic illness in primary care and following evaluation serious consideration should now be given to the expansion of the programme to also incorporate high risk primary prevention as a key aim for the future.



## Section 2 – Clinical Data Analysis

### March 2003 – April 2004

#### 2.0 Overview

The data presented in this report is for the first year of the programme to the end of April 2004. In total 10,041 patients were registered into the Heartwatch programme in this period and data on continuing care visits was returned for 9,540 patients. These patients attended a total of 26,196 Heartwatch visits to the end of April 2004.

Registration details demonstrate that:

- Almost three-quarters of patients are male (73.5%)
- Less than one-fifth are aged under 55 years (14.6%)
- Almost three-quarters (73.1%) of patients had a medical card
- Over one half of patients had no significant family history of cardiovascular disease

Looking at patients who attended four visits, statistically significant improvement in the control of identified risk factors as evidenced by a reduction in the proportion of patients outside the target measurements set by the programme occurred in the areas of:

- Systolic and diastolic blood pressure
- Total and LDL cholesterol
- Smoking

- No significant improvements were observed in respect of body mass index and waist circumference.
- 177 new cases of diabetes (1.8% of all Heartwatch patients) were identified.
- Substantial numbers of patients had their medications changed at their first Heartwatch visit ranging from 4% of those on aspirin to 55% of those on fibrate.
- 30.9% of patients were referred to a dietician.
- Attendance in respect of OT, smoking cessation and exercise were low.

#### Inclusion Criteria

- Over half of patients (54.3%) had suffered an Acute Myocardial Infarction (AMI).

- 38.4 % of males had undergone Coronary Artery Bypass Grafting (CABG) compared to 24.9% of females.
- 16.9% of females had undergone Percutaneous Transluminal Coronary Angioplasty (PTCA) compared to 7% of males.

#### Family History

- Over one half (54.5%) of patients had no significant family history of cardiovascular disease.
- 24.3% had a first degree male relative <55 years who had died from cardiovascular disease.
- 15.8% had a first degree female relative <65 years who had died from cardiovascular disease.
- 5.5% had both a first degree male relative <55 years and a first degree female relative <65 years who had died from cardiovascular disease.

#### Modification of Risk Factors

All patients who attended four visits were looked at and changes over time within this group of patients were compared to assess the change in the proportion of patients outside target (i.e. not ideally controlled) for the various identified risk factors.

Statistically significant improvement as indicated by a reduction in the percentage of patients outside target was seen in:

- Systolic Blood Pressure decreasing from 44.9% at first visit to 41.2% at fourth visit.
- Diastolic Blood Pressure decreasing from 13.6% at first visit to 10.1% at fourth visit.
- Total Cholesterol decreasing from 35.8% at first visit to 29.6% at the fourth visit.
- LDL (Low Density Lipoprotein ) Cholesterol decreasing from 33% at the first visit to 29.4% at the fourth visit.
- Smoking with the proportion of patients smoking decreasing from 13.9% at the first visit to 12.1% at the fourth visit.

Although the proportion of diabetic patients with HbA1c (indicator of glucose control) <6.5% was not shown to vary significantly, the proportion of diabetic patients with a HbA1c  $\geq$ 7.5% (which is the group of patients at highest risk of cardiovascular disease) decreased across each visit.

No statistically significant improvement was achieved in the areas of Body Mass Index (BMI) and waist circumference (indicator of central obesity).

Statistically significant disimprovement was shown in the area of physical activity with an increase over the course of the programme from 62.8% at the first visit to 65% at the fourth visit. The reliability of the measurement of physical activity in minutes per week is however, questionable.

## Medication Usage

- Substantial numbers of patients required a change in their medication at their first Heartwatch visit ranging from 4% of those on aspirin to 55% of those on fibrate.
- 73.6% of patients were on some lipid lowering medication by the first Heartwatch visit and this had increased to 84.1% at the fourth visit.
- The proportion of diabetics at the first visit on lipid lowering medication was 71.2%, increasing to 77.2% of diabetics at the fourth visit.
- The majority of patients (87.8%) were on aspirin, anti-coagulant or anti-platelet medication by the first Heartwatch visit and this had increased at the fourth visit to 96.0%.
- The proportion of diabetic patients on an ACE inhibitor or AT 2 inhibitor increased from 62% at the first visit to 69% at the fourth visit.
- Almost one fifth (19.3%) of patients who were outside target for systolic or diastolic blood pressure had their blood pressure medication altered at their first Heartwatch visit.
- Anti-smoking medication was prescribed at some time over the first four visits to a total of 14.7% of smokers.
- Weight reduction medication was prescribed at some time over the first four visits to 1.8% of patients who were outside target, that is  $\geq$ 25, for BMI.

## Referrals

- Almost one-third (30.9%) of all patients were referred to a dietician.
- 16.5% of smokers at first visit were referred to a smoking cessation officer at some point during their first four visits.
- 4.6% of all patients were referred to an exercise officer.
- Over one-in-ten (11.5%; n=82) of the patients who experienced an event\* in this time-period died as a result, of which 41.5% were as a result of a cardiac arrest.

\*Note this was the number of events reported on the online system – this may underestimate the number of actual events for two reasons – (a) GPs/Practice Nurses may not be aware of events unless informed by the patient and (b) event returns were not remunerated and hence there may not be an incentive to report same.

## 2.1 Description of Programme and Patient Registration

The data presented here is for the first year of the programme to the end of April 2004. In total 10,041 patients were registered into the Heartwatch programme in this period.

Table 2.1.1 shows the number registered in each health board area.<sup>i</sup> Approximately, 20% of GPs in each health board were included in the Heartwatch programme. This

*Table 2.1.1: Number registered in each health board area*

	N	%
ECAHB	641	6.4
MHB	1504	15.0
MWHB	728	7.2
NAHB	712	7.1
NEHB	1,691	16.8
NWHB	792	7.9
SEHB	1,012	10.1
SHB	1231	12.2
SWAHB	839	8.4
WHB	891	8.9
Total	10041	100.0

<sup>i</sup> The MHB figures are high because all diabetic patients are included in the MHB but this is not the case in the other health boards.

is greater in the NEHB (approximately 40%) as there was a pre-existing programme in place there prior to Heartwatch.

The age and sex profile of patients registered in the programme shows that almost three-quarters of patients are male and that less than one-fifth are aged under 55 years (Table 2.1.2). No differences were noted in the age profile of males and females (Table 2.1.3).

Table 2.1.2: Age and sex profile of Heartwatch Patients

	N	%
<b>Sex</b>		
Females	2659	26.5
Males	2722	73.5
<b>Age-group*</b>		
< 55	1464	14.6
55-64	2722	27.2
65-74	3733	37.3
75 +	2098	20.9

\* Age was unavailable for 24 patients

Table 2.1.3: Age group for males and females

	Males		Females	
	N	%	N	%
<b>Age-group</b>				
< 55	1077	14.6	387	14.6
55-64	2039	27.7	683	25.7
65-74	2762	37.5	971	36.6
75 +	1483	20.1	615	23.2

Patients aged 70 or over represent 40.3% of the Heartwatch population. Almost three-quarters (73.1%) of patients had a medical card – 70% of males compared to 81.6% of females (Table 2.1.4). The proportion with a medical card increases from 64.3% in those aged <55 years to 80.3% of those aged 75+ years.<sup>ii</sup>

Table 2.1.4: Proportion of patients with a medical card

	N	%
Total	7336	73.1
<b>Sex</b>		
Females	2169	81.6
Males	5167	70.0
<b>Age-group</b>		
< 55	942	64.3
55-64	1905	70.0
65-74	2789	74.7
75 +	1683	80.3

Of these 10,041 registered patients, data on continuing care visits was returned for 9,540 patients. There were a total of 26,196 Heartwatch visits in total to the end of April 2004. Table 2.1.5 shows that over 30% (2,883 of 9,540) of patients have attended four visits to date. Over 80% of those who attended for a first visit also attended for a second visit and almost 72% of those have attended their third visit to date. Over half of those who attended their third visit have already attended for a fourth visit.

Table 2.1.5: Number of visits attended to date

	N
Visit 1	9540
Visit 2	7665
Visit 3	5499
Visit 4	2883
Visit 5	608
Visit 6	3
Total Number of visits	26196

Table 2.1.6 shows the number of patients attending for first, second, third and fourth visits in each health board area.

<sup>ii</sup> All persons aged 70 and over in Ireland are entitled to a medical card. Comparisons throughout this report based on medical card status are thus limited to those under 70 years.

Table 2.1.6: The number of patients attending for first, second, third and fourth visits in each health board area.

	Visit 1	Visit 2	Visit 3	Visit 4
	N	N	N	N
ECAHB	588	422	276	133
MHB	1460	1094	715	324
MWHB	696	589	412	243
NAHB	672	520	350	180
NEHB	1564	1334	1000	522
NWHB	766	663	556	397
SEHB	980	791	576	266
SHB	1183	974	699	359
SWAHB	793	634	426	223
WHB	838	644	478	236

## Qualifying Criteria

The criteria on which patients qualified for entry into the Heartwatch programme were recorded under four categories – AMI, CABG, PTCA and MHB Diabetes Patient – as shown in Table 2.1.7.<sup>iii</sup> One qualifying criteria was recorded for 78% of patients while 20.3% of patients had two qualifying criteria and 1.7% had more than two qualifying criteria.

A higher proportion of males qualified under CABG, 38.4% compared to 24.9% of females, while a higher proportion of females qualified under PTCA, 16.9% compared to 7% of males.

Comparing age-groups shows that a higher proportion of those aged <55 years qualified under PTCA, while a higher proportion of those aged 55 years and older qualified under CABG.

Table 2.1.7: Qualifying criteria by patient sex and age group

	AMI	CABG	PTCA	MHB Diabetes Patient
	%	%	%	%
<b>Total</b>	<b>54.3</b>	<b>34.9</b>	<b>9.6</b>	<b>24.9</b>
<b>Sex</b>				
Females	52.6	24.9	16.9	23.1
Males	55.0	38.4	7.0	25.6
<b>Age-group</b>				
< 55	53.5	29.7	14.8	27.1
55-64	55.0	35.4	9.3	25.6
65-74	53.7	37.1	8.1	24.6
75 +	55.2	33.7	9.0	23.2

<sup>iii</sup> Note a patient could have more than one qualifying criteria. In total, 11,778 qualifying criteria were recorded for 9,518 Heartwatch patients.

## Family History

Family history status was recorded for 7,790 (77.6%) of all enrolled patients (Table 2.1.8). Over one half of patients had no significant family history. Almost one-quarter had a first degree male relative <55 years who had died from cardiovascular disease, 15.8% had a first degree female relative <65 years who had died from cardiovascular disease and 5.5% had both a first degree male relative <55 years and a first degree female relative <65 years who had died from cardiovascular disease. No differences were noted between family histories in terms of sex, age-group or medical card status<sup>iv</sup> (Table 2.1.9).

Table 2.1.8: Enrolled patients' family history.

	N	%
First Degree Male Relative <55	1886	24.2
First Degree Female Relative <65	1231	15.8
Both Male <55 & Female <65 First Degree Relative	431	5.5
No significant family history	4242	54.5

Table 2.1.9: Family history by patient profile

	First degree male relative <55	First degree female relative <65	Both male <55 and female <65 first degree relative	No significant family history
	%	%	%	%
<b>Sex</b>				
Females	21.4	19.2	7.2	52.2
Males	25.2	14.6	4.9	55.3
<b>Age-group</b>				
< 55	26.3	14.6	5.4	53.6
55-64	24.9	16.3	6.0	52.8
65-74	23.9	15.9	5.3	54.9
75 +	22.6	15.6	5.5	56.3
<b>Medical Card Status of those &lt; 70 years</b>				
Non-medical card holder	27.5	14.7	5.5	52.3
Medical card holder	24.1	16.2	5.6	54.1

## Patients excluded from the programme

Practices were asked to return details of patients who were excluded from participating in the programme and the reasons for same. The returns for this element were not remunerated and this may be a reason for the low response in this section. In total, the details on 75 patients were returned nationally. More than one reason for exclusion was recorded for three patients resulting in a total of 83 reasons listed. These were generally the existence of co-morbidities.

<sup>iv</sup> Medical card status may be used as a proxy socio-economic status and hence is only shown for those aged <70 years as all patients over 70 are now entitled to a medical card and hence the comparison is not valid for this group. As stated in an earlier footnote, this applies throughout this report.

## 2.2 Clinical Measurements

As described earlier, Heartwatch monitors a number of key patient measurements and set target values for each as defined in the European Task Force Report 1998. The aim is to move patients whose risk factors are outside the target value towards, and as much as possible within, the target values during the course of the programme. We describe the Heartwatch population in terms of each of these measurements and how they changed over the course of their visits.<sup>v,vi</sup>

## Systolic Blood Pressure

The mean systolic blood pressure (SBP) for all patients who attended the first visit and the proportion of patients outside target, that is with a SBP of 140 mmHg or more, is shown in Table 2.2.1. The proportion of patients outside this target was significantly related to gender (with females higher), age group (increasing with age) and medical card status. (with medical card holders higher).

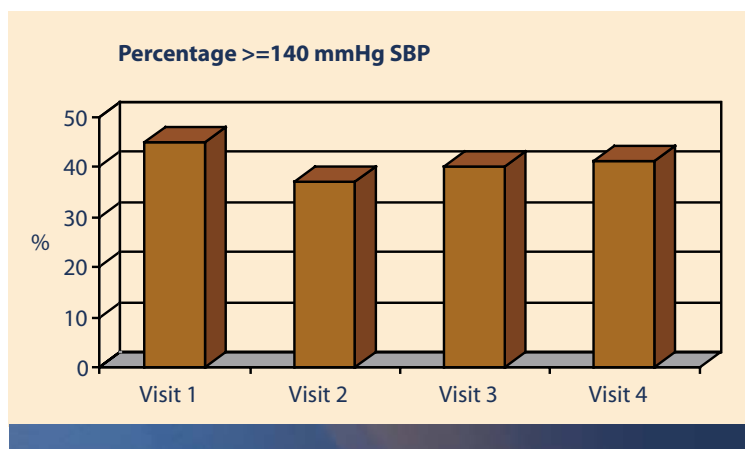
Table 2.2.1: Mean SBP and the proportion of patients outside target at the first visit for all patients attending

	Mean SBP (mmHg)	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>135.6</b>	<b>9473</b>	<b>4182</b>	<b>44.1%</b>
<b>Sex**</b>				
Females	138.6	2509	1285	51.2%
Males	134.4	6964	2897	41.6%
<b>Age-group**</b>				
<55	133.8	1390	556	40.0%
55-64	135.0	2569	1098	42.7%
65-74	136.0	3527	1601	45.4%
75 +	136.8	1968	919	46.7%
<b>Medical Card Status of those &lt;70 years**</b>				
Non-medical card holder	133.5	1770	699	39.5%
Medical card holder	135.6	3882	1737	44.7%

\*\* Significant at  $p < 0.01$

Figure 2.2.1 compares the proportion of patients who were outside target ( $\geq 140$  mmHg) for SBP at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target varied significantly during the enrolment, with a decrease over the course of the programme from 44.9% at the first visit to 41.2% at the fourth visit. Table 2.2.2 compares changes in the proportion outside target for SBP across gender, age and medical card status groups.

Figure 2.2.1



<sup>v</sup> The fourth visit was used for this comparison as it was felt that sufficient numbers had attended four visits to allow for the various breakdowns.

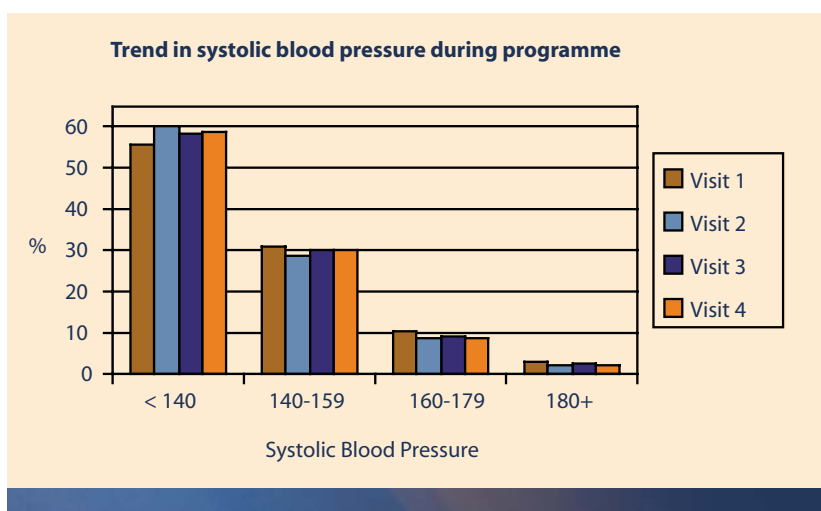
<sup>vi</sup> When comparing changes between visits, it is necessary to include only those patients who have attended all visits. Hence when comparing changes between visit 1 and visit 4, the number is only those who have attended four visits.

Table 2.2.2: SBP - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>44.9</b>	<b>37.0</b>	<b>40.1</b>	<b>41.2</b>
<b>Sex</b>				
Females	53.8	43.4	47.1	49.3
Males	42.0	34.8	37.8	38.5
<b>Age-group</b>				
< 55	40.3	35.5	30.9	38.9
55-64	43.1	37.1	41.1	42.3
65-74	47.0	37.6	42.1	41.9
75 +	46.4	37.8	41.0	40.1
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	41.3	30.5	32.2	39.0
Medical card holder	44.4	38.2	41.0	42.5

Figure 2.2.2 allows the comparison of the proportion of patients in each systolic blood pressure measurement band at each visit. The proportion in each of the higher bands can be seen to be decreasing at subsequent visits.

Figure 2.2.2



## Diastolic Blood Pressure

The mean diastolic blood pressure (DBP) for all patients who attended the first visit and the proportion of patients outside target, that is with a DBP of 90 or more, is shown in Table 2.2.3. The proportion of patients outside this target was significantly related to age group (decreasing with age) and medical card status (with medical card holders lower).

Table 2.2.3: Mean DBP and the proportion patients outside target at the first visit for all patients attending.

	Mean DBP (mmHg)	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>78.1</b>	<b>9476</b>	<b>1403</b>	<b>14.7%</b>
<b>Sex</b>				
Females	77.9	2513	373	14.8%
Males	78.2	6963	1030	14.7%
<b>Age-group**</b>				
<55	79.0	1392	250	17.9%
55-64	78.1	2570	384	14.9%
65-74	78.0	3527	504	14.2%
75 +	77.6	1968	262	13.2%
<b>Medical Card Status of those &lt;70 years**</b>				
Non-medical card holder	79.5	1772	330	18.5%
Medical card holder	77.8	3883	556	14.3%

\*\* Significant at  $p < 0.01$

Figure 2.2.3 compares the proportion of patients who were outside target ( $\geq 90$  mmHg) for DBP at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target varied significantly during the enrolment, with a decrease over the course of the programme from 13.6% at the first visit to 10.1% at the fourth visit. Table 2.2.4 compares changes across gender, age and medical card status groups.

Figure 2.2.3

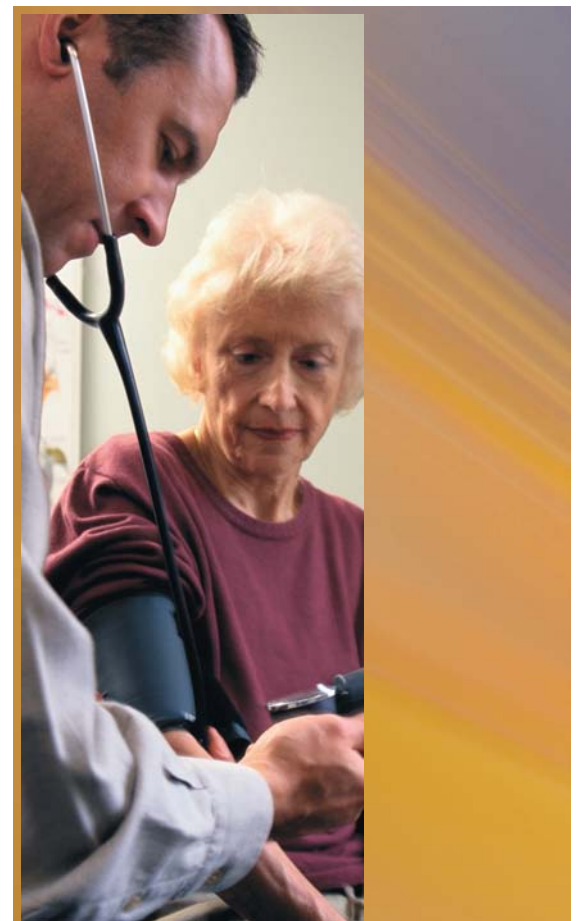
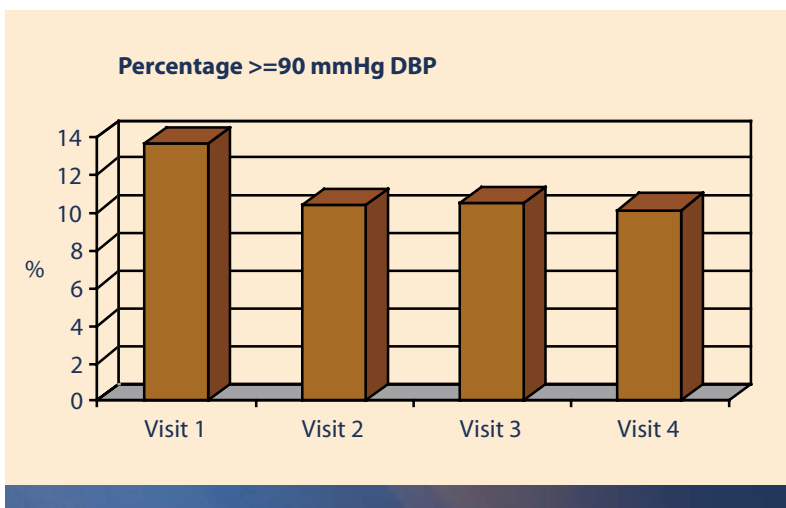


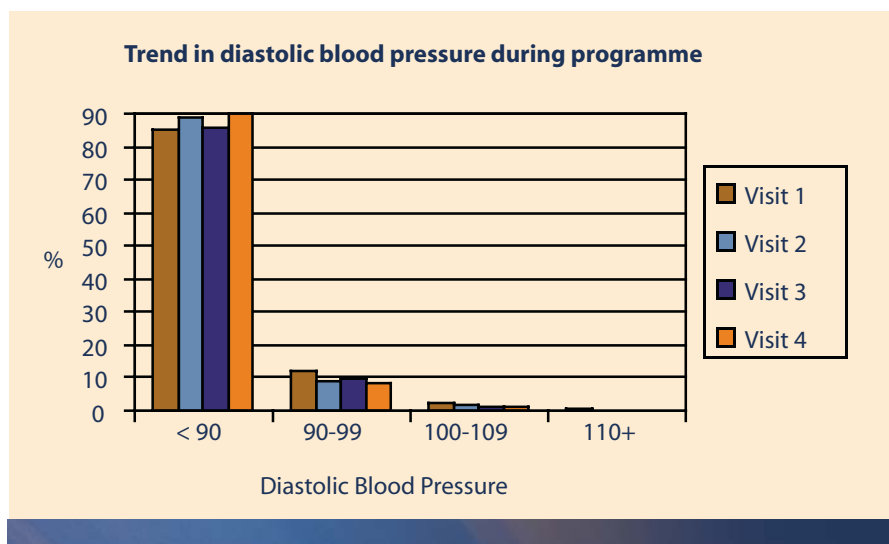


Table 2.2.4: DBP - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883)

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>13.6</b>	<b>10.4</b>	<b>10.5</b>	<b>10.1</b>
<b>Sex</b>				
Females	13.9	12.0	10.6	11.5
Males	13.5	9.9	10.4	9.7
<b>Age-group</b>				
< 55	16.7	10.8	9.5	9.5
55-64	13.3	11.0	11.3	11.4
65-74	12.6	9.4	10.3	10.8
75 +	13.8	11.2	10.4	7.7
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	32.5	34.7	28.7	26.1
Medical card holder	34.6	34.9	28.7	29.9

Figure 2.2.4 allows the comparison of the proportion of patients in each diastolic blood pressure measurement band at each visit. The proportion in each of the higher bands is small but can be seen to be decreasing at subsequent visits.

Figure 2.2.4



## Total Cholesterol

The mean total cholesterol for all patients who attended at the first visit and the proportion of all patients outside target, that is with a cholesterol of 5 mmol or more, is shown in Table 2.2.5. This proportion varies significantly with gender (with females higher), but not with age group or medical card status.

Table 2.2.5: Mean total cholesterol at the first visit for all patients attending and the proportion of all patients outside target.

	Mean total cholesterol (mmol)	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>4.7</b>	<b>9327</b>	<b>3382</b>	<b>36.2%</b>
<b>Sex**</b>				
Females	4.9	2477	1092	44.1%
Males	4.6	6850	2290	33.4%
<b>Age-group</b>				
<55	4.7	1372	528	38.5%
55-64	4.7	2516	890	35.3%
65-74	4.7	3483	1251	35.9%
75 +	4.7	1936	707	36.5%
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	4.7	1736	636	36.6%
Medical card holder	4.7	3821	1379	36.1%

\*\* Significant at  $p < 0.01$

Figure 2.2.5 compares the proportion of patients who were outside target ( $\geq 5$  mmol) for total cholesterol at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of

patients shows that the proportion outside target varied significantly during the enrolment, with a decrease over the course of the programme from 35.8% at the first visit to 29.6% at the fourth visit. Table 2.2.6 compares changes across gender, age and medical card status groups.

Figure 2.2.5

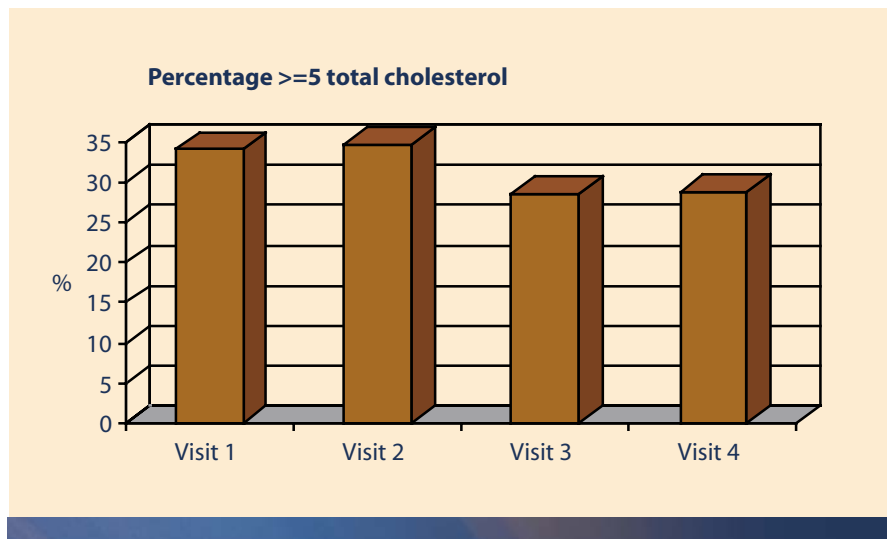
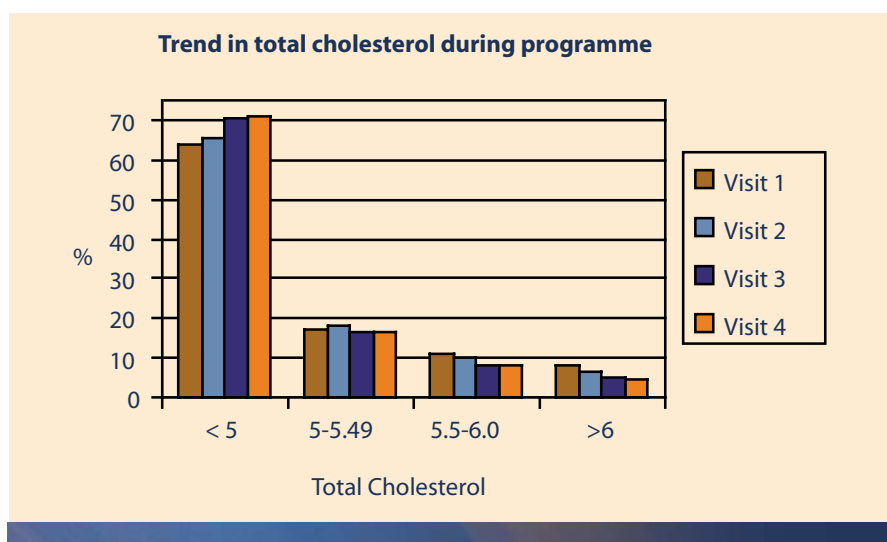


Table 2.2.6: Total Cholesterol - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>34.1</b>	<b>34.7</b>	<b>28.5</b>	<b>28.8</b>
<b>Sex</b>				
Females	41.2	40.8	36.2	34.0
Males	31.8	32.5	25.8	26.9
<b>Age-group</b>				
< 55	37.8	36.0	30.5	30.9
55-64	34.0	35.5	27.6	28.4
65-74	32.8	32.8	28.9	27.8
75 +	33.9	35.6	27.8	29.1
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	32.5	34.7	28.7	26.1
Medical card holder	34.6	34.9	28.7	29.9

Figure 2.2.6 allows the comparison of the proportion of patients in each total cholesterol measurement band at each visit. The proportion in each of the higher bands of 5.5 - 6.0 mmol/l and >6 mmol/l show an obvious linear reduction each subsequent visit.

Figure 2.2.6



## LDL Cholesterol

The mean LDL cholesterol for all patients who attended the first visit and the proportion of patients outside target, that is with an LDL of 3 mmol or more, is shown in Table 2.2.7. The proportion of patients outside this target was significantly related to gender (with females higher) and age group (decreasing with age) but not with medical card status.

Table 2.2.7: Mean LDL cholesterol at the first visit for all patients attending and the proportion of patients outside target.

	Mean LDL cholesterol (mmol)	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>2.7</b>	<b>9113</b>	<b>3215</b>	<b>35.3%</b>
<b>Sex**</b>				
Females	2.8	2405	912	37.9%
Males	2.7	6708	2303	34.3%
<b>Age-group*</b>				
<55	2.8	1348	522	38.7%
55-64	2.7	2470	879	35.6%
65-74	2.7	3393	1160	34.2%
75 +	2.7	1883	646	34.3%
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	2.8	1701	634	37.3%
Medical card holder	2.7	3747	1334	35.6%

\*\* Significant at  $p < 0.01$  \* Significant at  $p < 0.05$

Figure 2.2.7 compares the proportion of patients who were outside target ( $\geq 3$  mmol) for LDL cholesterol at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of

patients shows that the proportion outside target varied significantly during the enrolment, with a decrease over the course of the programme from 33% at the first visit to 29.4% at the fourth visit. Table 2.2.8 compares changes across gender, age and medical card status groups.

Figure 2.2.7

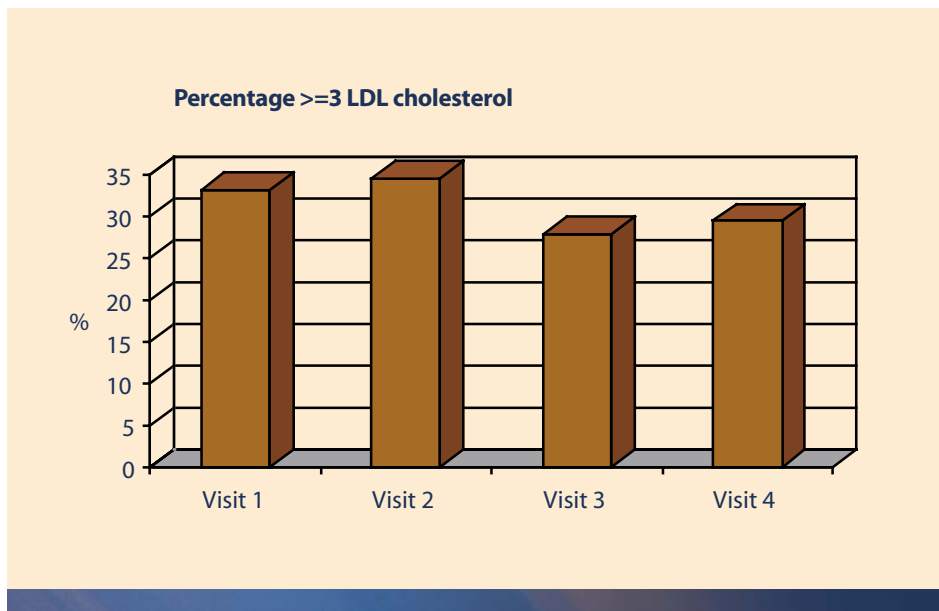


Table 2.2.8: LDL cholesterol - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>33.0</b>	<b>34.6</b>	<b>27.9</b>	<b>29.4</b>
<b>Sex</b>				
Females	36.2	35.6	30.8	29.7
Males	32.0	34.3	26.9	29.4
<b>Age-group</b>				
< 55	38.1	37.4	34.6	33.8
55-64	33.9	39.3	29.8	34.3
65-74	31.3	30.7	25.4	27.2
75 +	31.5	33.9	25.5	24.3
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	32.6	35.9	30.6	31.3
Medical card holder	35.1	36.5	30.0	32.5

## HDL and Triglycerides

As part of the programme, there was a risk factor target of >1 for HDL and <2 for triglycerides. As these were not treatment targets, they were only measured at the programme outset and not throughout the programme. Over one third of patients (35.9%; n=2668) had a HDL of  $\leq 1$  and over one half of patients had triglycerides of  $\geq 2$  (53.1%; n=4432).

## Body Mass Index

The mean body mass index (BMI) for all patients who attended the first visit and the proportion of patients outside target, that is with a BMI of 25 or more, is shown in Table 2.2.9. The proportion of patients outside this target was significantly related to gender (with females lower), age group (decreasing with age) and medical card status (with medical card holders lower).

Table 2.2.9: Mean BMI at the first visit for all patients attending and the proportion of patients outside target.

	Mean BMI	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>28.2</b>	<b>9235</b>	<b>7087</b>	<b>76.8%</b>
<b>Sex**</b>				
Females	28.2	2385	1684	70.6%
Males	28.3	6850	5403	78.9%
<b>Age-group**</b>				
<55	28.8	1361	1079	79.3%
55-64	28.3	2502	1936	77.4%
65-74	28.2	3453	2661	77.1%
75 +	27.7	1901	1395	73.4%
<b>Medical Card Status of those &lt;70 years**</b>				
Non-medical card holder	28.9	1738	1421	81.8%
Medical card holder	28.2	3782	2880	76.2%

\*\* Significant at  $p < 0.01$

Table 2.2.10: BMI - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>76.3</b>	<b>75.2</b>	<b>76.4</b>	<b>77.2</b>
<b>Sex</b>				
Females	70.2	70.4	70.5	70.0
Males	78.3	76.8	78.3	79.5
<b>Age-group</b>				
< 55	77.1	76.1	79.0	78.7
55-64	76.7	76.1	75.9	76.4
65-74	76.7	75.5	76.6	77.7
75 +	74.5	73.0	74.7	76.1
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	82.6	82.0	81.6	83.4
Medical card holder	74.6	73.7	75.0	75.2

Figure 2.2.8

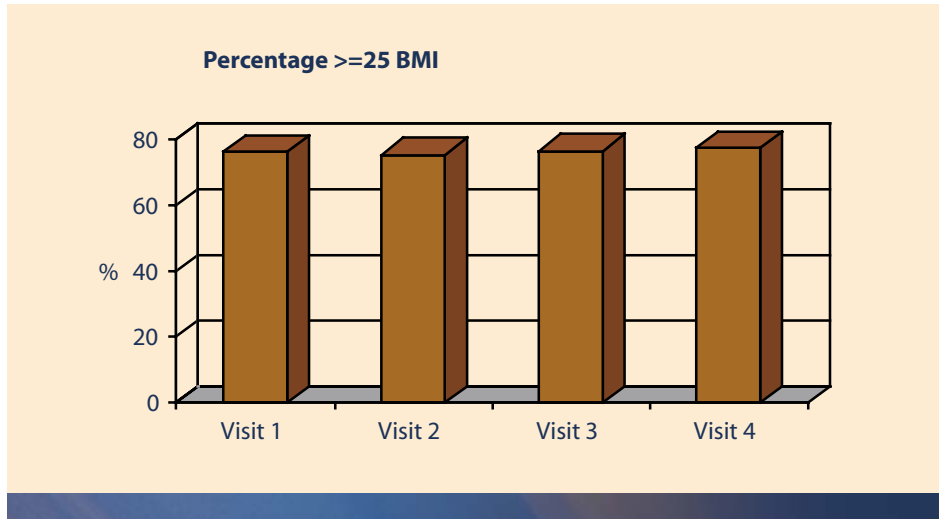
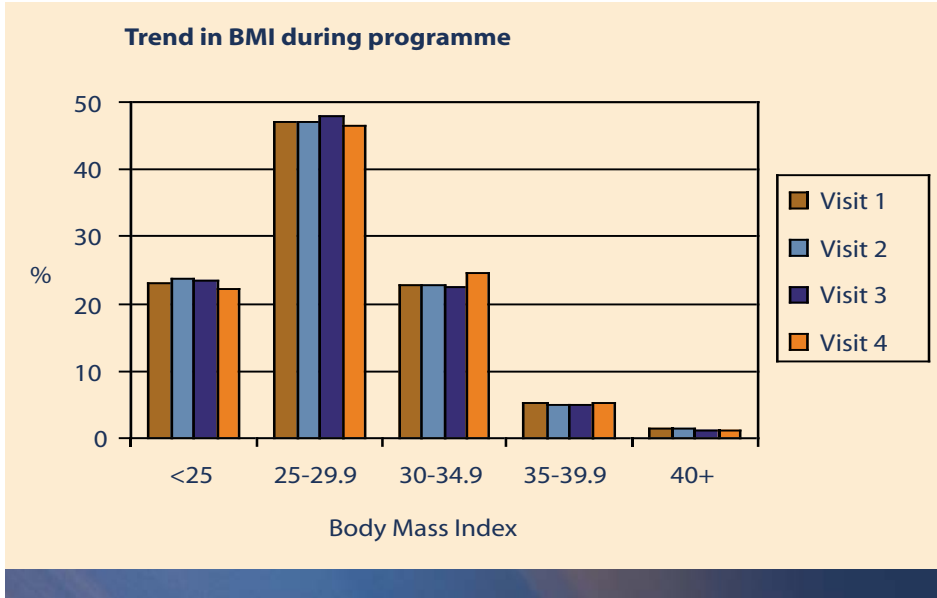


Figure 2.2.8 compares the proportion of patients who were outside target ( $\geq 25$ ) for BMI at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target did not change significantly during the enrolment. Table 2.2.10 compares changes across gender, age and medical card status groups.

Figure 2.2.9 allows the comparison of the proportion of patients in each body mass index measurement band at each visit. The proportion in each band varies little across each subsequent visit.

Figure 2.2.9



## Waist Circumference

The waist circumference for all patients who attended the first visit and the proportion of patients outside target, that is with waist circumference of  $\geq 94$ cm for males and  $\geq 80$ cm for females, is shown in Table 2.2.11. The proportion of patients outside this target was significantly related to gender (with females lower), and medical card status (with medical card holders lower).

Table 2.2.11: Mean waist circumference at the first visit for all patients attending and the proportion of patients outside target.

	Mean Waist Circumference	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>96.1</b>	<b>7826</b>	<b>7235</b>	<b>92.4%</b>
<b>Sex**</b>				
Females	90.4	2059	1665	80.9%
Males	98.1	5762	5570	96.6%
<b>Age-group</b>				
<55	96.1	1118	1026	91.8%
55-64	96.4	2126	1983	93.3%
65-74	96.2	2906	2690	92.6%
75 +	95.6	1659	1519	91.6%
<b>Medical Card Status of those &lt;70 years**</b>				
Non-medical card holder	97.6	1457	1380	94.7%
Medical card holder	95.6	3186	2923	91.7%

\*\* Significant at  $p < 0.01$

Table 2.2.12: Waist Circumference - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>93.0</b>	<b>93.9</b>	<b>93.8</b>	<b>94.1</b>
<b>Sex</b>				
Females	80.1	81.9	82.6	84.6
Males	97.1	97.8	97.4	97.3
<b>Age-group</b>				
< 55	94.1	95.7	94.4	93.5
55-64	92.8	94.2	94.4	95.2
65-74	93.6	94.2	94.1	94.5
75 +	91.2	91.8	91.9	92.4
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	95.9	97.4	97.0	97.2
Medical card holder	92.3	93.6	93.2	93.4

Figure 2.2.10

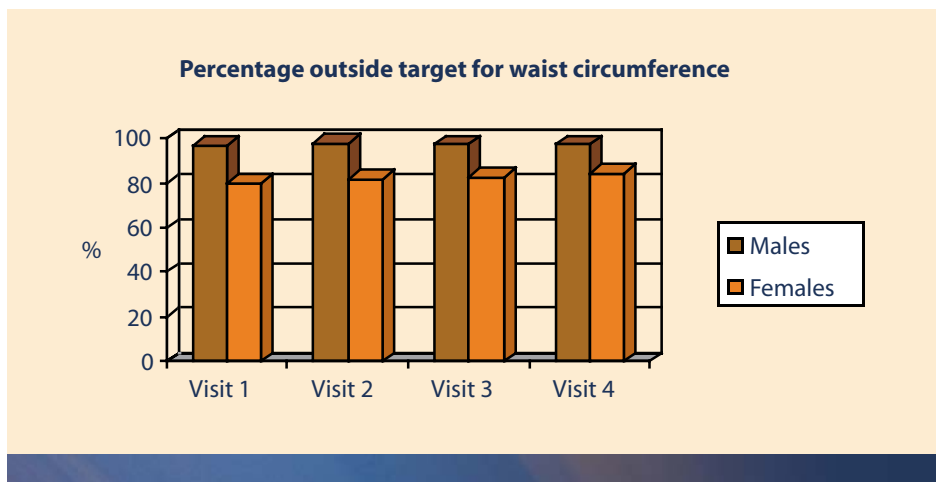


Figure 2.2.10 compares the proportion of patients who were outside target for waist circumference at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target did not change significantly during the enrolment for males but increased for females from 80.1% to 84.6%. Table 2.2.12 compares changes across gender, age and medical card status groups.



## Exercise

The mean minutes of exercise engaged in per week by patients who attended the first visit and the proportion of patients outside target, that is with 210 or less minutes per week, is shown in Table 2.2.13. The proportion of patients outside this target was significantly related to gender (with females higher), age group (generally increasing with age but with a high proportion of those aged < 55 not reaching the target) and medical card status (with medical card holders higher).

Table 2.2.13: Mean minutes of exercise at the first visit for all patients attending and the proportion of patients outside target.

	Mean Exercise (minutes/week)	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>221.7</b>	<b>9338</b>	<b>6297</b>	<b>67.1%</b>
<b>Sex**</b>				
Females	176.0	2497	1966	78.7%
Males	238.3	6891	4331	62.9%
<b>Age-group*</b>				
<55	211.6	1381	935	67.7%
55-64	226.1	2533	1664	65.7%
65-74	225.7	3493	2321	66.4%
75 +	216.1	1960	1367	69.7%
<b>Medical Card Status of those &lt;70 years**</b>				
Non-medical card holder	222.7	1757	1114	63.4%
Medical card holder	219.9	3832	2605	68.0%

\*\* Significant at  $p < 0.01$  \* Significant at  $p < 0.05$

Figure 2.2.11 compares the proportion of patients who were outside target ( $\leq 210$  minutes per week) for exercise activity at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target varied significantly during the enrolment, with an increase over the course of the programme from 62.8% at the first visit to 65% at the fourth visit. Table 2.2.14 compares changes across gender, age and medical card status groups.

Figure 2.2.11

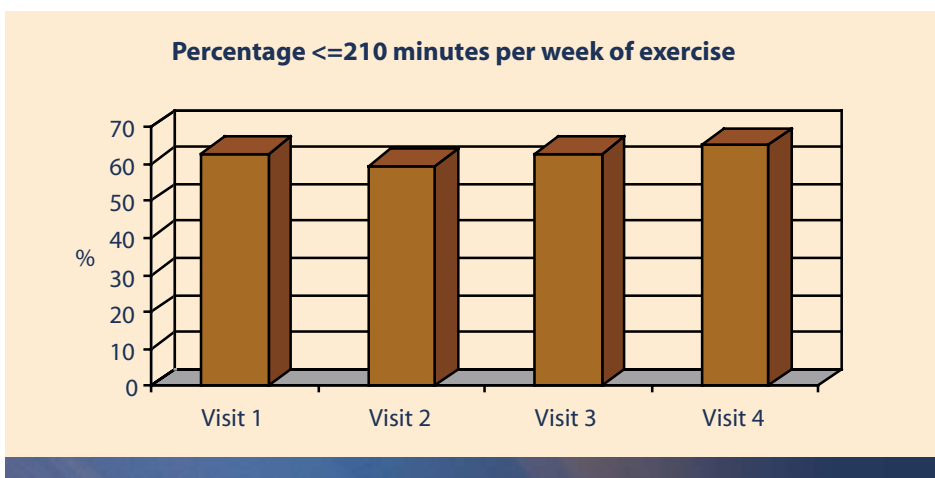


Table 2.2.14: Exercise - Percentage of patients outside target at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>62.8</b>	<b>59.6</b>	<b>62.8</b>	<b>65.0</b>
<b>Sex</b>				
Females	76.3	74.4	77.7	81.0
Males	58.2	54.7	57.9	59.6
<b>Age-group</b>				
< 55	64.1	60.8	63.4	66.9
55-64	61.5	60.5	62.0	64.2
65-74	62.1	57.2	62.9	63.1
75 +	64.8	62.1	63.3	68.1
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	56.4	55.1	53.7	58.0
Medical card holder	65.1	61.5	66.5	66.6

## Smoking

The proportion of smokers among all patients who attended the first visit is shown in Table 2.2.15. Smoking status was significantly related to age group (decreasing with age) and medical card status (with medical card holders higher).

Table 2.2.15: Smoking status at the first visit for all patients attending.

	% of smokers	N of patients
<b>Total</b>	<b>15.5%</b>	<b>9534</b>
<b>Sex</b>		
Females	15.9%	2524
Males	15.3%	7010
<b>Age-group**</b>		
<55	20.5%	1401
55-64	16.0%	2578
65-74	14.4%	3550
75 +	13.8%	1984
<b>Medical Card Status of those &lt;70 years**</b>		
Non-medical card holder	14.9%	1783
Medical card holder	17.7%	3899

\*\* Significant at  $p < 0.01$



Table 2.2.16: Smoking - Percentage of patients outside target (that is, smoking) at each visit for patients who have attended all four visits (n=2883).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>13.9</b>	<b>13.2</b>	<b>12.9</b>	<b>12.1</b>
<b>Sex</b>				
Females	13.8	13.8	12.7	12.8
Males	14.0	13.0	13.0	11.9
<b>Age-group</b>				
< 55	17.4	16.2	15.9	15.4
55-64	15.3	14.4	14.4	13.0
65-74	13.0	12.4	12.9	11.6
75 +	11.6	11.2	10.4	9.8
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	12.2	11.1	12.6	9.3
Medical card holder	16.2	15.1	14.7	14.6

Figure 2.2.12

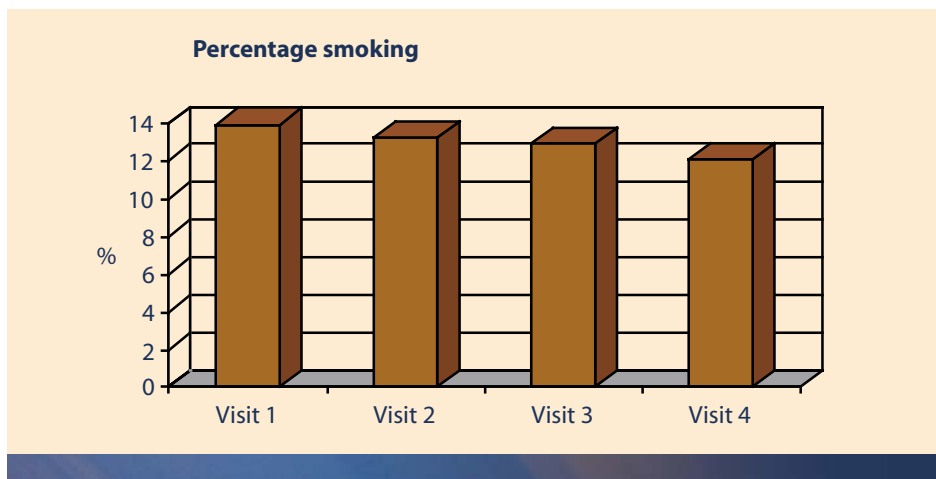


Figure 2.2.12 compares the proportion of patients who were smokers at each visit for patients who attended all four visits. Looking at all patients who attended four visits and comparing changes over time within this group of patients shows that the proportion of patients smoking decreases significantly during the enrolment from 13.9% at the first visit to 12.1% at the fourth visit. Table 2.2.16 compares changes across gender, age and medical card status groups.

## Diabetes

Just over one-fifth (21.3%; n=2135) of those enrolled in the Heartwatch programme had diabetes as recorded at the first visit – the majority of which were Type II diabetes (Table 2.2.17).

Table 2.2.17: Type of diabetes – Diabetic patients at first visit

	N	%
IGT	51	2.4
Type I	233	10.9
Type II	1851	86.7

Over the subsequent three Heartwatch visits, an additional 177 patients were identified as having diabetes (1.8% of all Heartwatch patients).

## HbA1c – Diabetic Population

The mean HbA1c for all diabetic patients who attended the first visit and the proportion of patients outside target, that is with a HbA1c of 6.5 or more, is shown in Table 2.2.18. The proportion of patients outside this target was significantly related to gender (with females higher) but was not related to age group or medical card status.

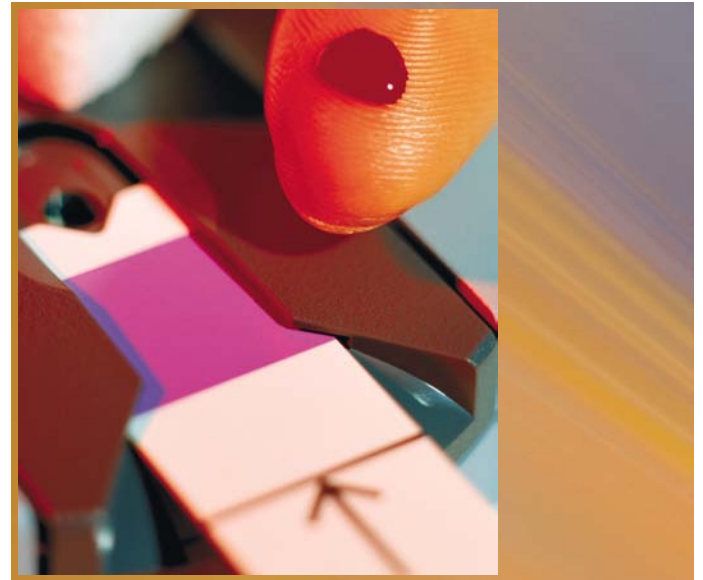


Table 2.2.18: Mean HbA1c at the first visit for all diabetic patients attending and the proportion of patients outside target.

	Mean HbA1c	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>7.4</b>	<b>1909</b>	<b>1345</b>	<b>70.5%</b>
<b>Sex**</b>				
Females	7.5	696	517	74.3%
Males	7.4	1213	828	68.3%
<b>Age-group</b>				
<55	7.6	314	228	72.6%
55-64	7.5	530	385	72.6%
65-74	7.4	659	454	68.9%
75 +	7.2	400	275	68.9%
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	7.6	402	290	72.1%
Medical card holder	7.5	793	569	71.8%

\*\* Significant at  $p < 0.01$

Table 2.2.19: HbA1c - Percentage of diabetic patients outside target at each visit for patients who have attended all four visits (n=625).

	% Outside target at visit 1	% Outside target at visit 2	% Outside target at visit 3	% Outside target at visit 4
<b>Total</b>	<b>65.9</b>	<b>69.1</b>	<b>68.9</b>	<b>68.4</b>
<b>Sex</b>				
Females	69.0	68.8	70.1	68.1
Males	64.6	69.3	68.3	68.6
<b>Age-group</b>				
< 55	67.6	75.0	73.3	77.0
55-64	68.3	71.4	69.9	65.9
65-74	64.2	66.7	66.5	67.9
75 +	64.2	66.7	69.1	66.7
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	63.7	69.7	61.2	63.8
Medical card holder	69.7	70.8	73.2	71.2

Figure 2.2.13

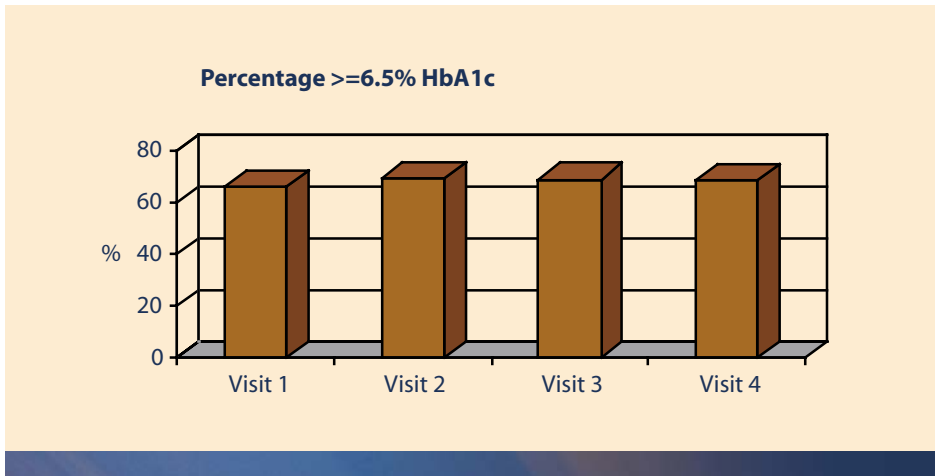
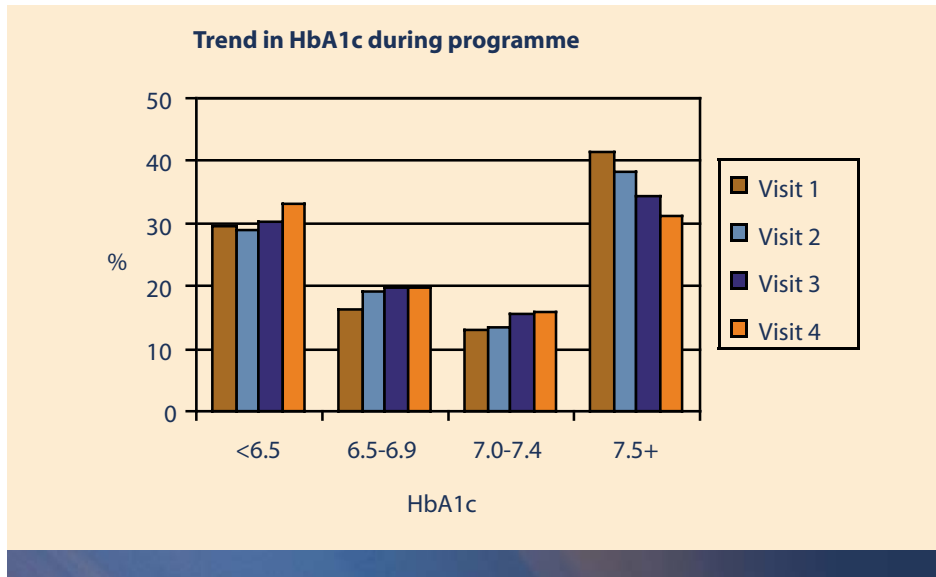


Figure 2.2.13 compares the proportion of patients who were outside target ( $\geq 6.5$ ) for HbA1c at each visit for patients who attended all four visits. Looking at all diabetic patients who attended four visits and comparing changes over time within this group of patients shows that the proportion outside target did not change significantly during the enrolment. Table 2.2.19 compares changes across gender, age and medical card status groups.

Figure 2.2.14 allows the comparison of the proportion of diabetic patients in each HbA1c measurement band at each visit. Although the proportion of diabetic patients <6.5% was not shown to vary significantly, the proportion of diabetic patients with a HbA1c in the highest band of  $\geq 7.5\%$  can be seen to decrease across each visit.

Figure 2.2.14



## Creatinine – Diabetic Population

The mean creatinine level for diabetic patients was 95.12 at the first visit. The mean level was 96.02, 96.63 and 99.35 respectively for diabetic patients at the second, third and fourth visit. Creatinine of 115 or lower is considered normal – the proportion of patients with a creatinine in excess of this level was 14.4% of diabetics at the first visit, 13.5% at the second visit, 15.0% at the third visit and 15.4% at the fourth visit. Looking at diabetic patients who attended both the first and fourth visit, the proportion who had a creatinine level of  $\geq 115$  increased from 14.9% to 15.9%.

## Proteinuria and Microalbuminuria in Diabetic Patients

The percentage of diabetic patients with proteinuria decreases over the course of the programme with the percentage of diabetics at each visit with proteinuria changing from 12.7% for at the first visit to 6.8% at the fourth visit (Table 2.2.20). Diabetic patients in the Midland Health Board who did not have proteinuria were tested for microalbuminuria. The proportion of these patients with microalbuminuria was 18.5% at the first visit and 18.8% at the fourth visit.

Table 2.2.20: Proteinuria and Microalbuminuria.

	Visit 1	Visit 2	Visit 3	Visit 4
<b>Total % of all Diabetics with Proteinuria</b>	12.7	9.0	10.2	6.8
<b>Total % of MHB Diabetics with no proteinuria with microalbuminuria</b>	18.5	18.1	21.8	18.8

## Fasting Glucose – Non-Diabetic Population

Fasting glucose was taken for all non-diabetic patients at the first visit only. The mean fasting glucose for all non-diabetic patients who attended the first visit and the proportion of patients outside target, that is with a fasting glucose of 5.5 or more, is shown in Table 2.2.21. The proportion of patients outside this target was significantly related to gender (with females lower) but not to age group or medical card status.

Figure 2.2.15 allows the comparison of the proportion of diabetic patients in each fasting glucose measurement band at the first visit.

Figure 2.2.15

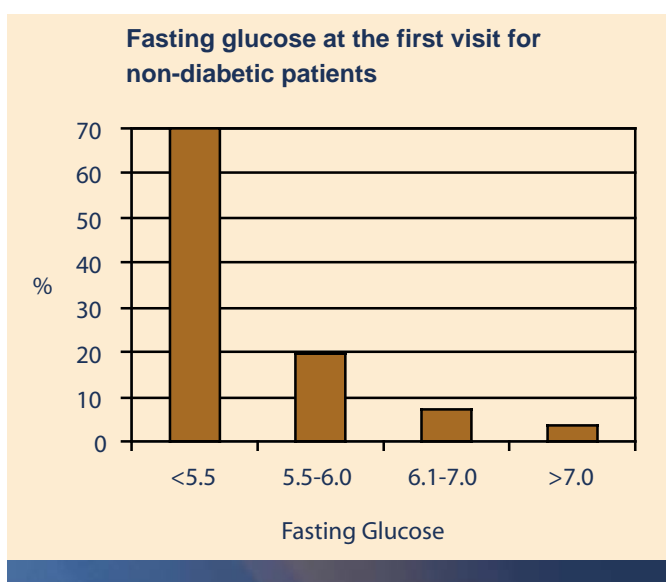


Table 2.2.21: Mean fasting glucose at the first visit for all non-diabetic patients attending and the proportion of patients outside target.

	Mean fasting glucose	N of patients	N Outside target at visit 1	% Outside target at visit 1
<b>Total</b>	<b>5.4</b>	<b>5377</b>	<b>1692</b>	<b>31.6%</b>
<b>Sex**</b>				
Females	5.3	1278	347	27.3%
Males	5.4	4099	1345	32.9%
<b>Age-group</b>				
<55	5.3	735	231	31.6%
55-64	5.4	1466	455	31.2%
65-74	5.4	2047	658	32.3%
75 +	5.5	1117	345	30.9%
<b>Medical Card Status of those &lt;70 years</b>				
Non-medical card holder	5.3	987	304	30.9%
Medical card holder	5.4	2176	702	32.4%

\*\* Significant at  $p < 0.01$

Table 2.3.1: Proportion of patients on medications and change in medication

	Patients on medication first visit		Patients on medication fourth visit	Medication change † first visit
	N	%	%	%
Sulphonylureas	958	9.5	9.4	10.5
Biguanides	992	9.9	10.7	12.6
Glucosidase	146	1.5	0.8	39.7
Other hypoglycaemic agents	148	1.5	1.2	25.0
Aspirin	8010	79.7	84.5	4.4
Beta blocker	5293	52.7	58.3	9.9
Ace inhibitors	4221	42.0	48.9	11.6
Anti coagulants	1029	10.3	11.4	35.5
Anti platlets	1425	14.3	13.1	28.4
Statin	7256	72.2	82.8	9.6
Fibrate	259	2.6	1.8	55.6
Other lipid lowering	375	3.7	2.5	55.2
Diuretic	2435	24.2	28.4	14.9
Ca channel blocker	1810	18.0	20.2	18.6
ATII inhibitor	860	8.6	8.8	27.7
Other anti hypertensive	1244	12.4	10.1	17.5

† As a percentage of those on the medication (previously or new) at the first visit.

## 2.3 Other Outcome Data

### Medications

Table 2.3.1 details the proportion of patients on each medication<sup>vii</sup> at the first and fourth visit and shows the proportion of these whose medication was changed<sup>viii</sup> at the first visit. Substantial numbers of patients required a change in their medication at their first Heartwatch visit ranging from 4% of those on aspirin to 55% of those on fibrate. Table 2.3.2 shows any medication change throughout the programme.

vii Either on medication prior to visit or put on medication at visit. viii Changed – decreased dose, increased dose, discontinued or new.



Of all patients, 73.6% were on some lipid lowering medication by the first Heartwatch visit<sup>ix</sup>. At the fourth visit, this increased to 84.1%. Of those who were outside the target for lipids at the first visit, 73.9% were on a lipid lowering medication. This had increased to 81.9% of those outside target for lipids at the fourth visit. The proportion of diabetics at the first visit on lipid lowering medication was 71.2%, increasing to 77.2% of diabetics at the fourth visit.

The majority of patients (87.8%) were on aspirin, anti-coagulant or anti-platelet medication by the first Heartwatch visit. At the fourth visit, this increased to 96.0%.

The proportion of patient on an ace inhibitor or an AtII

inhibitor increased from 47.7% at the first visit to 55.4% at the fourth visit. The proportion of diabetic patients on either medication increased from 62% at the first visit to 69% at the fourth visit.

Almost one fifth (19.3%) of patients who were outside target for systolic or diastolic blood pressure had their blood pressure medication (beta blocker, ace inhibitor, diuretic, CA channel blocker, AtII inhibitor or other anti-hypertensive) altered at their first Heartwatch visit.

Anti-smoking medication was prescribed at some time over the first four visits to a total of 14.7% of smokers.

Weight reduction medication was prescribed at some time over the first four visits to 1.8% of patients who were outside target, that is  $\geq 25$ , for BMI.

Table 2.3.2: Any medication change throughout the programme

Any medication change during programme		
	N	% of all patients enrolled
Sulphonylureas	284	2.8
Biguanides	317	3.2
Glucosidase	78	0.8
Other hypoglycaemic agents	78	0.8
Aspirin	659	6.6
Beta blocker	1019	10.1
Ace inhibitors	1181	11.8
Anti coagulants	603	6.0
Anti platelets	810	8.1
Statin	1682	16.7
Fibrate	302	3.0
Other lipid lowering	458	4.6
Diuretic	801	8.0
Ca channel blocker	656	6.5
AtII inhibitor	556	5.5
Other anti hypertensive	498	5.0

<sup>ix</sup> Either before or as a result of this visit.

## Referrals

Table 2.3.3 shows the total number of patients referred\* to services throughout the programme to the end of April 2004.<sup>xi</sup> Almost one-third (30.9%) of all patients were referred to a dietician - 33.4% of patients who were outside target for BMI or waist circumference at their first visit were referred to a dietician and 33.9% of patients who were outside target on total or LDL cholesterol at their first visit were referred to a dietician.

Of those who reported smoking at their first Heartwatch

visit, 16.5% were referred to a smoking cessation officer at some point during their first four visits.

Of all patients, 4.6% were referred to an exercise officer. This increases slightly to 5.8% among those who were outside target for exercise levels at their first visit.

A particularly high attendance at services when referred was noted in respect of cardiology and ECG. Attendance was also high for dietician, rehab and PHN services. Attendance in respect of OT, smoking cessation and exercise were low.

Table 2.3.3: Patient referrals throughout the programme.

	N of patients referred	% of patients referred	N of referred patients who attended	% of referred patients who attended
Dietician	3102	30.9%	1872	60.3
Cardiology Public	1199	11.9%	944	78.7
ECG	695	6.9%	509	73.2
Cardiology Private	567	5.6%	390	68.8
Exercise Officer	464	4.6%	179	38.6
Rehab	428	4.3%	252	58.9
Smoking Cessation	365	3.6%	99	27.1
PHN	140	1.4%	66	47.1
OT	76	0.8%	13	17.1

## Events During Enrolment

A total of 847 events were recorded<sup>xii</sup> up to the end of April 2004. These 847 events were experienced by 712 patients. Almost one-fifth of patients experienced more than one event (Table 2.3.4).

Table 2.3.4: Number of Events experienced by patients.

	N of patients with an event	% of patients with an event
One Event	580	81.5
Two Events	94	13.2
Three Events	30	4.2
Four Events	3	0.4
Five Event	2	0.3
Six Events	1	0.1
Eight Events	2	0.3

<sup>x</sup> With respect to referral at any visit; for consistency only first four visits are included. <sup>xi</sup> Referrals of course are affected by the availability of services in each area, however, no linkage data in this respect is available here.  
<sup>xii</sup> Note this was the number of events reported on the online system – this may underestimate the number of actual events for two reasons – (a) GPs/Practice Nurses may not be aware of events unless informed by the patient and (b) event returns were not remunerated and hence there may not be an incentive to report same.

Table 2.3.5: Frequency of events.

	<b>N</b>	<b>As % of all events</b>	
Hospital Admissions	579	66.3	
A & E Admissions	61	7.0	
Cardiology OPD	309	35.4	
PCI/PTCA	105	12.0	
Cardiac Arrest	41	4.7	
MI	71	8.1	
CVA	39	4.5	
TIA	36	4.1	
PVD	28	3.2	
Intermittent Claudication	17	1.9	
Arrythmia	68	7.8	
Heart Failure	61	7.0	
Angina Pectoris	198	22.7	
Conduction Disorder	21	2.4	
Adverse Drug Reaction	26	3.0	
	<b>N</b>	<b>% of patients with an event</b>	<b>% of all patients enrolled</b>
Deaths	82	11.5	0.8

Table 2.3.5 shows the frequency of each event, appointment and admission recorded. Two-thirds of all events required a hospital admission. Angina pectoris was a factor in almost one-quarter of the events recorded. Over one-in-ten (11.5%; n=82) of the patients who experienced an event in this time-period died as a result, of which 41.5% were as a result of a cardiac arrest.

## Section 3 – Discussion & Findings

Morbidity and mortality from Cardiovascular Disease is one of the greatest challenges facing the Irish Health Service. “Vascular diseases, of which cardiovascular disease is the most common, account for over 40% of all deaths and 37% of deaths under 65 years in Ireland at this time. Within cardiovascular disease, ischaemic heart disease (IHD) is by far the most common. It alone accounts for approximately 25% of all deaths.”<sup>1</sup>

The European Heart Survey Programme, Euroaspire 11, concluded “Considerable potential to raise the standard of preventive cardiology exists throughout Europe in order to reduce coronary morbidity and mortality.”<sup>5</sup>

The Heartwatch Programme sets out to tackle the problem of Cardiovascular Disease in Ireland by establishing a strategic national approach to the implementation of internationally recognized cardiovascular prevention guidelines (‘Prevention of Coronary Disease in Clinical Practice 1998’ Second Joint Task Force of European and other Societies on Coronary Prevention).<sup>4</sup>

Ireland is now leading the way in Europe, as such an innovative and comprehensive national approach to the prevention of Cardiovascular Disease has not been previously adopted.

In this initial implementation phase of the programme the focus is on secondary prevention of cardiovascular

disease as “Preventive efforts are most effective when they are directed at those at highest risk. As recommended in the report of the Cardiovascular Strategy Group, ‘Building Healthier Hearts’ (R6.21)<sup>3</sup> the programme is being provided in the general practice setting.

The implementation of the national programme has been undertaken in a spirit of partnership between all of the parties including the Department of Health and Children, the Health Boards, the Irish Heart Foundation and the Irish College of General Practitioners as the Heartwatch Programme is the main focus of delivery of the Cardiovascular strategy in the Primary care setting.

This first tranche of data from the Heartwatch Programme firmly establishes the necessity for a national strategic approach towards the control of Cardiovascular disease in Ireland. The patients selected for the programme have established Coronary Heart Disease and in most cases have attended out-patient clinics and their GP. However it is known that “A high prevalence of unhealthy lifestyles, modifiable risk factors and inadequate use of prophylactic drug therapies is found in coronary patients across Europe.”<sup>6</sup> This is confirmed by the Heartwatch Programme which demonstrates that significant numbers of patients were poorly controlled at their first visit.

Table 3.1 Percentage of patients outside target at first Heartwatch visit.

Risk Factor	Target	% Outside Target
Systolic BP	< 140	44.4%
Diastolic BP	<90	15.1%
Smoking Males	0	15.9%
Smoking Females	0	15.3%
Total Cholesterol	<5 mmol/l	37.5%
LDL Cholesterol	<3 mmol/l	37.8%
HDL Cholesterol	>1 mmol/l	35.9%
Triglycerides	<2 mmol/l	53.15%
Body Mass Index	<25 Kg/m <sup>2</sup>	76.6%
Waist Circumference	<94cms (male) <80cms (female)	92.4%
Physical Activity	>210 mins/week	67%

Table 3.1 shows the percentage of patients whose risk factors were outside the ideal targets as laid down in the document 'Prevention of Coronary Disease in Clinical Practice 1998'<sup>5</sup> when they attended for their first Heartwatch Visit.

It is interesting to compare these figures with data published in 2002 by Feely et al<sup>6</sup> (Table 3.2) which

compared data on secondary prevention collected in patient interviews in 1994 in 246 patients (30% female) – 150 consecutive patients studied approximately 18 months after coronary artery by-pass grafting (CABG) at the National Centre for Cardiac Surgery and 96 patients some 30 months following acute myocardial infarction – to the results obtained from the Irish Centre in the EUROASPIRE II Study in 2000.

*Table 3.2 Comparison of the prevalence of risk factors and physical activity in Irish patients in 1994 and 2000 and in 15 European countries in 2000 (\*most extreme in Europe) †*

	IRL1994	IRL2000	EUR2000
Smoking – Men	19%	26%	22%
Smoking – Women	19%	30%*	18%
Hypertension $\geq$ 140/90	48%	48%	50%
Overweight BMI >25 kg/m <sup>2</sup>	60%	75%	79%
Diabetes	7%	12%*	28%
Cholesterol >5 mmol/l	68%	54%	58%

† Feely et al.<sup>6</sup>

It should be noted that Heartwatch patients differ from the EUROASPIRE II group in not including patients with unstable angina.

It can be seen from the above tables that Heartwatch patients at the beginning of the programme had a markedly lower prevalence of smoking particularly in females and of elevated total cholesterol. The prevalence of hypertension and the percentage of patients overweight is similar.

When examining data on drug therapy (Table 3.3, Table 3.4) it is seen that the use of Statins, ACE Inhibitors and Beta Blockers was greater in Heartwatch patients at first visit compared to the data from 2000. The use of Aspirin was markedly lower however.

*Table 3.3 Drug Therapy in Heartwatch Patients at First Visit.*

On statin	72.2%
Aspirin	79.7%
B-blockers	52.7%
ACE inhibitors	42.0%
Aspirin, anti-coagulant or other anti-platelet medication	87.8%

*Table 3.4 Comparison between drug therapy used in secondary prevention in Ireland in 1994 and 2000 and in 15 European countries in 2000 (\*highest in survey) †*

	IRL1994	IRL2000	EUR2000
On statin	18%	62%	61%
Aspirin	85%	92%*	86%
B-blockers	15%	47%	63%
ACE Inhibitors	27%	27%	38%

† Feely et al.<sup>6</sup>

The achievement of significant change in this group of patients will take some time, however, patients involved in the Heartwatch programme are already showing improvement in the control of certain risk factors. The data as presented shows significant improvement in the control of Systolic Blood Pressure, Diastolic Blood Pressure, Total Cholesterol, LDL Cholesterol and Smoking, along with significant increases in the uses of medications.

The areas of Body Mass Index, Waist Circumference and Physical Activity have not shown improvement at this early stage. These areas require greater modification of lifestyle by the patient and will therefore require a team approach on a more prolonged timescale.

One of the interesting findings to date is the apparent gender difference in the diagnosis and management of Coronary Heart Disease. The data indicates poorer control of modifiable risk factors in females versus males in the areas of Systolic Blood Pressure and Total Cholesterol. Currently only 26.5% of the patients enrolled in the programme are female. The patients selected for Heartwatch have suffered a Myocardial Infarction or have undergone either a Coronary Bypass Graft (CABG) or Percutaneous Coronary Intervention (PCI). There is no marked difference between males and females in the proportion of all deaths accounted for by vascular diseases in general and by IHD (Ischaemic Heart Disease) in particular.<sup>5</sup> Gender issues in Coronary Heart Disease are quite complex and have been reported in other countries.<sup>7,8</sup> Further analysis of the Heartwatch data will be required.

Another significant finding is the poor control of Diabetes in this population, as evidenced by the HbA1c (Glycosylated Haemoglobin) levels which is the generally accepted indicator of glucose level control in Diabetics.<sup>9</sup> However, significant improvement in control occurred in the patients with a HbA1c level greater than 7.5% who are recognised to be the patients at greatest risk of a cardiovascular event.

A number of new diabetics (1.8% of cohort) were diagnosed in the course of patients first four visits which again demonstrates one of the many benefits of monitoring this high risk population. Among previously diagnosed diabetics we have seen an increase in the use of ACE inhibitors and Angiotensin Receptor Blockers which have been shown to reduce the incidence of renal complications in this group.<sup>10,11,12</sup>

“Current data on morbidity from Cardiovascular Disease in Ireland are limited both by their lack of coverage of key areas such as General Practice and by the quantity quality and accessibility of the data recorded.”<sup>11</sup> The Heartwatch Programme already has produced one of the largest databases of information on Coronary Heart Disease in Primary Care in Ireland. As this database grows it will prove to be an invaluable resource.

After reviewing the data from patients who have attended for just the initial four visits, the need for the strategic approach being implemented in the Heartwatch Programme and the benefits which can be achieved at such an early stage in the life of the programme are clear. Inevitably, this leads to the strong desire for this programme to be extended to the whole population.

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## Appendix 1

### Members of Heartwatch National & Regional Implementation Structures

#### National Steering Committee

Professor John Feely	Pharmacology, Trinity College – Chairperson
Mr Christopher Fitzgerald	Department of Health & Children
Dr Eibhlin Connolly	Department of Health & Children
Dr Emer Shelley	Department of Health & Children
Dr Vincent Maher	Irish Heart Foundation
Ms Maureen Mulvihill	Irish Heart Foundation
Dr James Reilly	Irish Medical Organisation
Dr Michael Boland	Irish College of General Practitioners
Dr Richard Brennan	Irish College of General Practitioners
Dr Declan Bedford	North Eastern Health Board
Mr Patrick P Donnelly, Ms Siobhan Fitzpatrick (Representing Mr Donnelly)	Eastern Regional Health Authority
Ms Rita Callally	Irish Practice Nurses Association
<i>In Attendance:</i>	
Mr Brian Brogan, Mr Brian Dowling	Department of Health & Children
Ms Marie Kinsella	Department of Health & Children
Mr Peter Henshaw	Department of Health & Children
Dr Sean McGuire	Heartwatch Programme
Mr John Leahy	Heartwatch Programme

#### Data Management Committee

Professor Jane Grimson	Health Informatics Trinity College – Chairperson
Dr Emer Shelley	Department of Health & Children
Dr Michael Boland	Irish College of General Practitioners
Mr Fionán ÓCuinneagáin	Irish College of General Practitioners
Dr James Reilly, Dr Liam Lynch	Irish Medical Organisation



Dr Siobhan Jennings ..... Eastern Regional Health Authority

Dr Fenton Howell ..... North Eastern Health Board

*In Attendance:*

Mr Peter Henshaw ..... Department of Health & Children

Dr Sean McGuire ..... Heartwatch Programme

Mr John Leahy ..... Heartwatch Programme

**Heartwatch, National Programme Centre**

**Independent National Data Centre**

Dr Sean McGuire ..... Programme Director

Mr John Leahy ..... Programme Manager

Dr Brian Meade ..... Health Informatics Advisor

Ms Fiona Brophy ..... Administrator

Ms Maureen Dempsey ..... Assistant Administrator

Ms Caitriona Finn ..... Assistant Administrator

Ms Niamh Killeen ..... Assistant Administrator

**Heartwatch GP Coordinators**

Dr Brian Meade ..... ECAHB Region

Dr Niamh Collins ..... MHB Region

Dr David Boylan ..... MWHB Region

Dr David Reilly ..... NAHB Region

Dr Martin White ..... NEHB Region

Dr Eileen Coyne ..... NWHB Region

Dr John Cox ..... SEHB Region

Dr Ronan Boland ..... SHB Region

Dr Michael Joyce (Former GPC)

Dr Barry Boland ..... SWAHB Region

Dr Sinead Armstrong ..... WHB Region

**Heartwatch Nurse Facilitators**

Ms Maeve Cusack .....ECAHB

Ms Dorothy Moore (Former NF)

Ms Gráinne Nic Gabhann .....MHB

Ms Mary O'Halloran .....MWHB

Ms Mary Brosnan .....NAHB

Ms Johann Hoey (Former NF)

Ms Marian Kiernan (Former NF)

Ms Celine McKenna .....NEHB

Ms Claire Hennigan .....NWHB

Ms Fionnuala Killalea .....SEHB

Mr John Greaney .....SHB

Ms Una Murray .....SWAHB

Ms Siobhan Woods .....WHB

## Abbreviations

<b>BMI</b>	<b>B</b> Body Mass Index	<b>NAHB</b>	<b>N</b> Northern Area Health Board
<b>BP</b>	Blood Pressure	<b>NEHB</b>	North Eastern Health Board
	<b>C</b>	<b>NF</b>	Nurse Facilitator
<b>CABG</b>	Coronary Artery Bypass Graft	<b>NPC</b>	National Programme Centre
<b>CCV</b>	Continuing Care Visit	<b>NWHB</b>	North Western Health Board
<b>CVA</b>	Cerebrovascular Accident		<b>O</b>
<b>CVD</b>	Cardiovascular Disease	<b>OPD</b>	Outpatient Department
	<b>D</b>	<b>OT</b>	Occupational Therapist
<b>DBP</b>	Diastolic Blood Pressure		<b>P</b>
<b>DOHC</b>	Department of Health and Children	<b>PCI</b>	Percutaneous Coronary Intervention
	<b>E</b>	<b>PHN</b>	Public Health Nurse
<b>ECAHB</b>	East Coast Area Health Board	<b>PNA</b>	Practice Nurse Association
<b>ECG</b>	Electrocardiogram	<b>PR</b>	Patient Registration
	<b>G</b>	<b>PTCA</b>	Percutaneous Transluminal Coronary Angioplasty
<b>GMS</b>	General Medical Services	<b>PVD</b>	Peripheral Vascular Disease
<b>GPC</b>	General Practitioner Coordinator		<b>R</b>
<b>GPIT</b>	General Practitioners Information Technology	<b>RHASP</b>	Reduction of Heart Attack and Stroke through Prevention
	<b>H</b>		<b>S</b>
<b>HbA1c</b>	Glycosylated Haemoglobin	<b>SBP</b>	Systolic Blood Pressure
<b>HDL</b>	High Density Lipoprotein	<b>SCRC</b>	Social and Clinical Research Consultants
	<b>I</b>	<b>SEHB</b>	South Eastern Health Board
<b>ICGP</b>	Irish College of General Practitioners	<b>SHB</b>	Southern Health Board
<b>ICT</b>	Information and Communications Technology	<b>SPHERE</b>	Secondary Prevention of Heart Disease in General Practice
<b>IHD</b>	Ischaemic Heart Disease	<b>SWAHB</b>	South Western Area Health Board
<b>IHF</b>	Irish Heart Foundation		<b>T</b>
<b>IMO</b>	Irish Medical Organisation	<b>TIA</b>	Transient Ischaemic Attack
<b>INDC</b>	Independent National Data Centre		<b>V</b>
<b>IT</b>	Information Technology	<b>VFM</b>	Value For Money
	<b>L</b>		<b>W</b>
<b>LDL</b>	Low Density Lipoprotein	<b>WHB</b>	Western Health Board
	<b>M</b>		
<b>MHB</b>	Midland Health Board		
<b>MI</b>	Myocardial Infarction		
<b>MWHB</b>	Mid Western Health Board		

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