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Centre for Sports Studies,  
University of Kent,  
Kent, ENGLAND

**Study 1**

**Project Title: Demographic profile of patients accessing, or not accessing, cardiac rehabilitation services in the Medway & Swale areas of Kent**

Meadows, S., and Jobson, S.A.

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✉ **Address for Correspondence:**

Steve Meadows  
Centre for Sports Studies,  
University of Kent,  
Kent, ME4 4AG  
ENGLAND

Tel: +44 1634 88 88 11

Fax: +44 1634 88 88 90

E-mail: [s.meadows@kent.ac.uk](mailto:s.meadows@kent.ac.uk)

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## **Introduction**

Over the last 30 years cardiac rehabilitation (CR) has developed into a multi-factorial programme incorporating pharmacological therapy, risk factor management education, and behaviour change which targets metabolic risk factor management specifically relating to exercise, diet, stress and smoking cessation. CR services are found in many hospital and community programmes. CR comprises three distinct phases: inpatient (Phase I), outpatient (Phase II) and in the community / home (Phase III & IV). Participation in each phase of CR is determined by appropriate risk stratification to optimise resources and benefits. Education and counselling commence almost immediately aimed at disease risk factor management and behaviour change, and gradually low-level physical activities are introduced and continued throughout the programme. The emphasis throughout CR is to start with clinically supervised sessions and gradually wean the patient onto more community-based programmes, or home-based activity. On completion of CR, patients should be able to continue beyond their Phase IV programme, either in a community-based setting, or at home. Improved management of cardiovascular disease (CVD), earlier diagnostic procedures and advanced intervention techniques has resulted in an increasing number of CVD survivors. Early rehabilitation intervention has also meant that CVD sufferers regain function and reduce the risk of a secondary cardiac event.

## **Purpose**

The purpose of this study was to audit those patients who have accessed CR services provided by the Cardiac Rehabilitation (CR) team, part of Medway Community Healthcare, between April and September 2009.

## **Methods**

A data set was created utilising information gathered on patients by the Cardiac Rehabilitation (CR) team, pre and post Phase III cardiac rehabilitation, between April and September 2009. In order to select which data should be included for analysis, discussions were held with members of the CR team. In addition, similar criteria were selected to the data reported in the 2009 National Audit of Cardiac Rehabilitation (NACR). The selected criteria would help in developing a demographic profile of attendees and non-attendees of cardiac rehabilitation services in Medway, but also provide some indication of performance of the service, which might help stimulate dialogue about possible changes in the way CR services are provided.

## **Results**

As a sample of the potential information and utility that the data set could provide, a number of questions were selected by the researchers. These would provide some insight into the profile of a patient who did or did not attend cardiac rehabilitation during the data collection period. The questions would also reflect some of the key outcomes related to goals of cardiac rehabilitation interventions and demographic data relating to the different geographical areas of Medway and Swale.

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**It should be noted that this is not an exhaustive list of questions, but rather an illustrative sample. The data set has greater potential to supply important additional information, dependent upon the question asked.**

### **Demographic Questions**

The data set does provide a breakdown based upon postcode, along with Medway or Swale ward. Unfortunately at the present time there is insufficient data for individual wards to provide much meaningful information. What has been done is to divide the wards into Medway & Swale regions to provide some geographical comparison.

### **Sample Questions**

***Of those who accessed CR services, how many were males and how many were females?***

411 patients in total were included in the data collection.

294 were males (71.5%). The average age of these males was: 65.4 years.

117 were females (28.5%). The average age of these females was: 70.4 years.

***What was the gender differentiation of those who did, or did not access a CR exercise programme?***

Of those who did access a CR exercise programme (total of 162 patients) 125 were males (77.2%). This means that from this patient group 37 (22.8%) females accessed a CR exercise programme.

Of those who did not attend a CR exercise programme (249 in total) 169 were males (67.9%) and 80 (32.1%) were females.

These figures suggest that 39.4% of patients who enter CR accessed the exercise programme.

***For the total patient population (411 patients), what was the split between Medway and Swale?***

There were 270 (65.7%) patients from Medway and 126 (30.7%) from Swale. There were 15 patients who had to be classified as 'don't know'.

For the Medway region 108 (40%) accessed CR exercise, whilst 162 (60%) did not attend.

For Swale 48 (38.1%) attended and 78 (61.9%) did not attend. There would appear to be very little difference between the percentage of attendees and non-attendees of CR exercise in Medway and Swale.

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## **Demographic & NACR Question**

### ***What were the reasons for referral?***

A breakdown is shown below:

MI	= 257 (62.5%)
PCI	= 77 (18.7%)
CABG	= 58 (14.1%)
ACS	= 1 (0.24%)
Other surgery	= 15 (3.7%)
Heart failure	= 1 (0.24%)
Unknown	= 2 (0.48%)

## **Demographic & Risk Factor Questions**

### ***How many patients had a family history of CHD?***

82 (20%) don't know (data not recorded on patient documentation)

209 (50.8%) yes

120 (29.2%) no

### ***How many had hypertension?***

37 (9%) don't know (data not recorded on patient documentation)

232 (56.5%) yes

142 (34.5%) no

### ***How many were smokers?***

89 (21.7%) yes

139 (33.8%) previous smoker

137 (33.3%) never smoked

46 (11.2%) unknown

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***How many had high cholesterol?***

63 (15.3%) don't know (data not recorded on patient documentation)

227 (55.2%) yes

121 (29.5%) no

***How many had a BMI > 25?***

69 (16.8%) don't know (data not recorded on patient documentation)

210 (51.1%) yes

132 (32.1%) no

***How many patients were drinking more than the recommended levels of alcohol (> 21 units for males; > 14 units for females)?***

78 (19%) don't know (data not recorded on patient documentation)

17 (4.1%) yes

316 (76.9%) no

***What were their activity levels?***

57 (13.9%) don't know (data not recorded on patient documentation)

64 (15.6%) 5 x 30 min. a week at a moderate intensity (recommended level)

59 (14.3%) often, but not at recommended levels

69 (16.8%) sometimes

162 (39.4%) rarely / never exercised

***How many suffered with stress?***

84 (20.4%) don't know (data not recorded on patient documentation)

135 (32.9%) yes

192 (46.7%) no

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***How many had diabetes?***

33 (8%) don't know

Type I diabetes 6 (1.5%)

Type 2 diabetes 121 (29.4%)

The remaining 251 (61.1%) patients did not have diagnosed diabetes.

**Medway CR Service Practice**

***What type of invitation to CR resulted in an attendance at CR exercise?***

184 (44.8% of 411 total) had a face-to-face invitation. 64 (34.8% of 184 invitations) attended CR exercise. 120 (65.2%) of those who received a face-to-face invitation decided not to attend.

211 received a telephone invitation (51.3% of 411 total). 96 (45.5% of 211 telephone invitations) attended CR exercise. 115 (54.5%) patients did not attend following a telephone invitation.

12 (2.9% of total) received a letter invitation only; 2 (16.7%) of those patients who received their invitation by letter attended exercise.

For 4 patients, it was not known what type of invitation was used.

**Discussion Point**

Telephone invitation appears to have the best conversion to attendance at CR exercise sessions (45.5%), compared to a face-to-face (34.8%), or letter invitation (16.7%).

*This data needs to be analysed further using statistical techniques to establish whether there is a significant difference in type of invitation used and attendance at CR exercise sessions.*

***What reasons were given by patients for not accessing Phase III exercise sessions?***

249 did not access any CR exercise sessions. The main categories of reasons given by patients are shown below:

72 (28.9%) were not interested / refused

47 (18.9%) were medically unsuitable (non-cardiac / NHS excluded)

34 (13.7%) were medically unsuitable (cardiac / NHS excluded)

23 (9.2%) gave other reasons

16 (6.4%) died

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We conducted a further analysis to determine whether there was any difference in the reasons given for not attending between Medway and Swale patients. There was no difference between the two regions. Most patients in both regions who did not attend stated that they were not interested. The second biggest reason for not attending was that they were medically unsuitable (non-cardiac / NHS excluded).

Some geographical plotting of data was carried out by the Cardiac Rehabilitation team on those patients who did not attend CR and which electoral ward they resided in (see Appendix 1) and an attendance / non-attendance map of CR across Medway and Swale (see Appendix 2).

### **CR Outcome Measures**

#### ***Did anxiety scores, as measured by the HAD, improve as a result of participation in CR exercise?***

Exercise participants anxiety scores (HAD score) went down on average by 0.8.

But, for those who did not participate in CR exercise sessions, their anxiety scores (HAD score) decreased by 1.0.

### **Discussion Point**

Is there any relationship between anxiety scores and participation in CR exercise?

#### ***Did depression scores improve as a result of participation in CR exercise?***

For those patients who participated in CR exercise depression scores went down on average by 0.9 (HAD score).

Non-participants in CR exercise depression went up by 2.5 (HAD score).

#### ***Was there any difference in depression scores between Medway and Swale for users of CR?***

On average depression went down by 1.1 on the HAD score in Medway, whereas in Swale it went up by 0.2.

### **Discussion Points**

Does participation in CR exercise help to reduce depression amongst CR patients, as evidenced by their HAD scores? What mechanism leads to this potential decrease in the HAD depression score – is it the exercise itself or something else associated with the sessions (being part of an exercise group, increased social support, physical environment exercise is conducted in, time-out, etc.)?

#### ***Did anxiety scores (HAD score) at the start of the programme influence their decision to take part in CR exercise?***



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For those who did take part in CR exercise, the pre-CR anxiety HAD score was 6.5.

For those who didn't take part in CR exercise anxiety was higher (7.1 HAD score).

### **Discussion Point**

These results may suggest that anxiety could be a factor influencing patient's decisions to take part in CR exercise? Should CR services concentrate on reducing anxiety, perhaps through counselling or group discussion sessions, before inviting patients to exercise sessions?

### ***Did involvement in CR exercise influence systolic blood pressure (SBP)?***

Yes, for those who participated in the exercise sessions, SBP went down on average by 5.6 mmHg.

There was unfortunately no information available to determine whether there was a difference in SBP for those who did not participate in CR exercise sessions.

### ***Did involvement in CR exercise influence diastolic blood pressure (DBP)?***

Yes, for those who participated in CR exercise, it went down on average by 15.6 mmHg.

No data was available for non-CR exercisers.

### ***Did involvement in CR exercise influence heart rate?***

There appears to be no apparent effect on heart rate as a result of engagement in CR.

### ***Did activity levels change as a result of contact with CR service?***

There were 29 (13.6%) out of the 213 who had reported physical activity levels on their forms, who were achieving recommended physical activity levels (5 x 30mins at moderate intensity) prior to CR exercise. 42.3% (90 patients) were doing exercise 'rarely / never'.

Post CR service intervention only 27.5% (113) of the patients had reported activity levels on their forms. 65.5% (74 patients in total) were doing recommended levels of activity, whereas 10.6% (12) were exercising rarely / never.

### **Discussion Points**

These figures suggest that CR demonstrates some positive impact on getting more people exercising to recommended levels (an increase of 45 patients from 29 to 74) and reducing the number of those who rarely or never exercise (from 90 to 12 patients which is a reduction of 78 patients). So, CR had a positive impact on activity levels of 123 patients in total (30% of total patient group).

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### ***What effect did involvement in the CR programme have on smoking?***

67 of the 411 total patient group were known smokers at the start of CR. It was reported that 24 (35.8%) of the patients who smoked at the start of CR, quit during CR intervention; 43 (64.2%) did not quit.

### **Discussion Point**

Whilst demonstrating some degree of success in getting CR patients to quit smoking, is there room for targeting smokers more aggressively with quitting strategies, as the majority of smokers (64.2%) are not quitting during CR interventions?

### **Challenges of CR**

Despite the numerous benefits that CR has to offer, it is not without its challenges. From the results gathered from this audit, some of the challenges include low participation rates, gender-biased CR groups, problems with adherence and effective resource allocation and management. The benefits of risk reduction are only realised and retained through long-term lifestyle change. Poor engagement with CR, high drop-out or poor adherence to CR, continue to pose significant challenges to CR personnel, and even more so if CR services are extended to other eligible patient populations. The efficacy of CR to these groups needs to be established, so the increased emphasis on outcome measures needs to be at the forefront of auditing or reporting.

### **Recommendations**

As already mentioned, the questions posed reflect a sample of possible questions that can be asked of this data set. This report is not a definitive document, it barely scratches the surface of possible information that the data set can provide.

Whilst the number of patients which comprise each Medway or Swale ward are small, if patient data is continually recorded it will allow a more detailed geographic / demographic picture to emerge about who is, or is not, accessing CR services. In time this will help to determine demographic predictors of attendance. It might also allow better strategic planning to meet the specific needs of Medway and Swale residents, thereby providing a more effective service, customised to the needs of its users.

Constant monitoring will also be a good way to keep a check on the health and performance of your CR service in terms of meeting BACR standards. It would also be recommended that you keep track of the performance of your individual CR groups based at different locations in Medway and Swale. This could be done by identifying on the patient form which CR group has been attended and adding this as an additional column in the data sheet.

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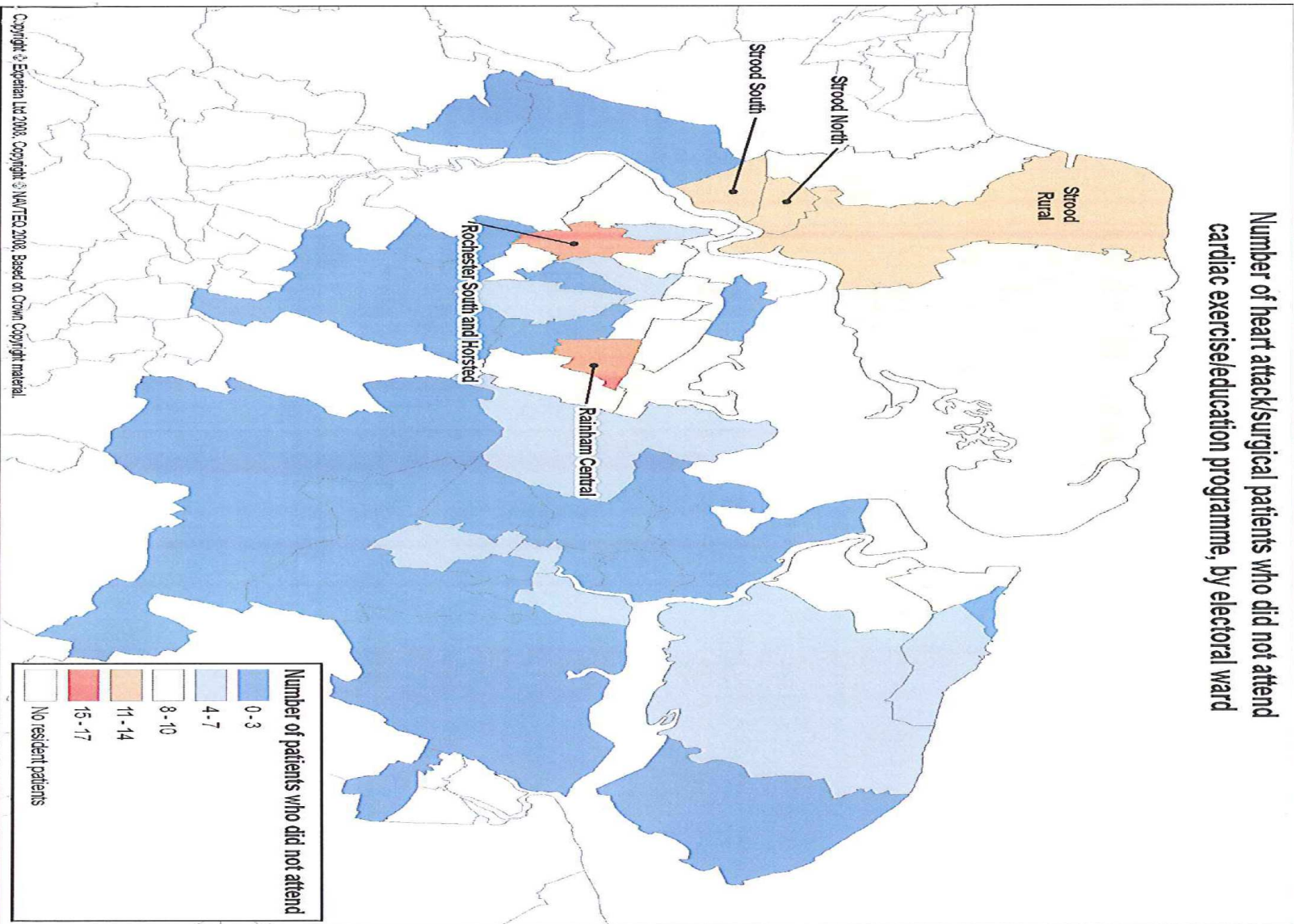
In terms of data recording, there needs to be more clarity in whether a patient accessed just the education element only, exercise only, or both exercise and education; this was not always clear.

### **Summary**

This patient audit exercise has revealed some potentially interesting information and there is scope for some further analysis of the data, as well as the potential to glean further insight into patient profiles, geographic / demographic characteristics and indication of outcome measures - the ultimate hallmark of an effective CR service. It has become apparent when discussing the findings of this audit that the CR team are constantly looking at ways to better meet patient needs and have already undertaken some re-evaluation of their practice to ensure improvement on patient outcomes. We are happy to discuss any of the information contained in this report, or any other questions you may have.

# Appendix 1

Number of heart attack/surgical patients who did not attend cardiac exercise/education programme, by electoral ward





Appendix 2

Location of heart attack/surgical patients by attendance of cardiac exercise/education programme

