

Sick leave in coronary artery disease: a review of the literature

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Summary

This review showed that most patients can return to work after myocardial infarction (MI). Percutaneous coronary intervention (PCI) is a less debilitating coronary artery intervention than coronary artery bypass grafting (CABG). Hence, it contributes towards more rapid return to work, although in the long run there are no differences in sick leave. People at higher ages or with physically demanding jobs return to work to a lesser degree. An international comparison shows that the duration of sick leave varies greatly and that there is no clear scientific evidence to provide guidance as to the duration and degree of sickness absence.

Research on sick leave in cardiac patients is scarce in recent years. Developments in acute coronary care should inspire renewed scientific involvement in this area of research.

Introduction

Cardiovascular diseases (CVDs) represent the third most common cause for long-term sickness absence in Sweden: 8% of the disability pensions in 2001 and 6% of sickness absence. There are no guidelines for the optimal duration and degree of sick leave and there are no well-defined interventions for reducing the duration or preventing disability pension. Rehabilitation remains the responsibility of the individual physician which, in practice, means broad variations in the type and level of interventions. This article reviews the current knowledge for the purpose of providing supportive information to those helping the cardiac patient return to the labour market.

Coronary artery disease (CAD) is the most common cause of death in Sweden. In the past decades, diagnostics and treatment, both with coronary artery intervention and pharmaceuticals, have improved greatly. These developments have contributed to a marked reduction in premature death, to fewer patients of working age with heart disease-related impairments and to the onset of disease at higher ages. Has this trend influenced sick leave and sick-listing practices in Europe?

The search for studies was based on relevant literature databases. Approximately 400 publications since 1975 addressing sickness absence due to CAD were identified, which included anginal chest pain, myocardial infarction (MI), chronic ischaemic heart disease, heart failure and conditions following various types of coronary artery interventions (CABG, PCI). Heart transplantation was not included. Other CVDs, i.e. the other

groups in ICD10 'I10-I99', have been excluded as very few studies could be identified within the respective diagnostic areas. In assessing the quality, we used the method recommended by the Swedish Institute for the Assessment of Medical Technology (SBU).

Sick leave after MI

Fourteen studies were found to be of sufficient quality (see Table 1). Two studies describe outcomes during the first year following infarction, six studies present predictors for return to work and six studies describe the outcome of interventions aimed at limiting sickness absence.

Outcome following MI

In a prospective cohort study, Herlitz et al⁷ investigated all patients aged <65 years with MI and who were employed part-time or full-time prior to infarction: 37% had returned to full-time work and 12% to part-time work one year post-MI. Higher age and larger infarctions influenced the outcome negatively.

Boudrez et al,² in the city of Gent, Belgium, found that of all men aged <60 years who had experienced MI, only a few were on long-term sick leave due to heart disease. During the course of the first year, 85% had returned to work.

Predictors for return to work

Maeland et al^{8,9} followed 249 MI patients aged <67 years for six months following onset: 25% were still on sick leave. Social and psychological factors negatively influenced the possibility of return to work: high age, low education, residence (worse in rural areas), stress at the workplace and anxiety, depression and poor self-confidence during the period of care. Wiklund et al¹⁴ in a cohort study of 201 male MI patients aged <60 years at work prior to MI showed that patients' motivation to return to work was the most important predictive factor. Patients with physically demanding jobs returned to work to a lesser degree than patients with lighter jobs. The duration of sick leave averaged 16 weeks in this cohort.

More recently, similar findings have been reported: a study of first MI patients from New Zealand found that 58% of the patients were working after six months.¹⁰ The patients' perception that the disease was an obstacle for returning to work predicted longer sick leave. Soejima et al¹³ showed that 83% of male Japanese MI patients were back at work after eight months.

Table 1. Studies included – myocardial infarction

Reference and country	Aim	Focus of study	No.	Mean age distribution	Type of sick leave data	Intervention	Return-to-work (%)	Results
Bengtsson, ¹ Sweden	To study the outcome of a rehabilitation programme after MI	Infarction patients <65 years	87: 44 vs 43	39–65	Number of sick-leave days year 1, % RTW	Combined cardiac rehabilitation programme	85	No significant difference in RTW between rehab and control groups. On average 177 vs 172 full-time sick-leave days, 58 vs 98 part-time days
Boudrez, ² Belgium	RTW after MI in men	All men ≤60 years in a regional infarction register	295	m: 57.5 y	Data via mailed survey 1991. Only RTW	60% participated in a rehabilitation programme	85	69% of all subjects RTW, 85% of those who worked before MI. Few cases of remaining sick leave
Burgess, ³ US	RCT of psychosocial rehabilitation after MI	Infarction patients who worked at least 20 hours /week before infarction	180: 89 vs 91	50.9±7.4	Number RTW 3–4 and 13 months after MI. Per cent moved to another job and sick-listed	Nursing-based psychosocial intervention	88 vs 88	10% still sick listed after 13 months, no effect from intervention
Dennis, ⁴ US	RCT of targeted advice based on cardiac stress test in men after uncomplicated MI	Infarction patients (men) ≤60, with uncomplicated MI, worked before	201: 102 vs 99	49 and 50±7	Detailed info on time, degree and type of RTW 6 months after MI. Economic consequences	Early stress test and targeted advice on sick-leave duration to primary care	91 vs 88	Shorter sick leave with targeted advice to primary care: 51 vs 75 sick-leave days after MI. RTW: 32% reduction which gave 2102 USD as extra income in the study group
Froelicher, ⁵ US	To compare two different interventions after MI with standard treatment	All survivors ≤70 years with MI	258: 84 vs 88 vs 86	57.1 vs 55.6 vs 56.3	RTW 12 vs 24 weeks after discharge	Physical exercise, vs physical exercise + education vs standard treatment	94	83% returned to work at 12 wk after MI, 94% after 24 weeks. No difference between groups
Hedbäck, ⁶ Sweden	To compare the outcome of a rehabilitation programme after MI with standard treatment	All patients <65 years admitted for acute MI	305: 148 vs 157	57.3 vs 57.2	Return at 1, 2 and 5 years after infarction	Combined cardiac rehab programme vs standard treatment	51.8 vs 27.4	No difference after 1 year (61.5 vs 56.5%) but after 2 years (64.9 vs 43.1%) and after 5 years
Herlitz, ⁷ Sweden	Outcome of morbidity and RTW 1 year after MI	All patients admitted to a specific hospital for MI	921	72, 16-98	Percentage RTW of total groups, and of groups <65 years	Standard medical treatment	49	Under 65: 37% full-time, 12% part-time. Age and infarction size predicts RTW

Table 1. Cont'd

Reference and country	Aim	Focus of study	No.	Mean age distribution	Type of sick leave data	Intervention	Return-to-work (%)	Results
Maeland, ⁸ Norway	RTW 6 months after infarction in relation to job before, demographic factors and disease severity	Consecutive group patients after infarction <67 years	249	<67	RTW and sick leave 6 months after MI	Standard medical treatment	72.7	See below. Residence, age, education, stress at work and with complications predict RTW
Maeland, ⁹ Norway	To study RTW 6 months after infarction vs psychological variables	Consecutive group patients after infarction <67 years	249	<67	RTW and sick leave 6 months after MI	Standard medical treatment	72.7	73% RTW half a year after infarction, 25% remained sick listed. Perception, anxiety, depression at hospital predictors for RTW
Petrie, ¹⁰ New Zealand	RTW 6 months after infarction in relation to patient's perception and participation in cardiac rehabilitation	Consecutive group patients after first infarction <65 years	143	53.2±8.4	RTW and sick leave 3 and 6 months after MI	Participation in a combined rehabilitation programme	58	40/105 RTW after 6 weeks, 76 after 6 months. The patient's initial perception of disease severity determines the prognosis
Pilote, ¹¹ US	RCT of targeted advice based on stress-EKG in men after uncomplicated MI; advice	Consecutive group patients after infarction ≤60 years, working before infarction	187: 95 vs 92	50 vs 51±6 vs 7	Via mailed survey/ telephone: RTW 1,3 and 6 months after infarction	Early stress test and targeted advice on sick-leave duration to primary care	91 vs 95	No difference after 6 mths, but more patients in intervention group to coronary intervention. Patients without resid. ischaemia at work sooner (38 days) in intervention group than standard treatment (65 days)
Smith, ¹² US	To study RTW 1 year after infarction vs work before, demographic factors and degree of severity of the disease	Consecutive group patients after first infarction <70 years	151	51.2±8	Via mailed survey/ telephone: RTW 4 and 12 months after infarction	Standard medical treatment	72	Educational level, physical demands of job, perception of disease and economic motives mainly determine RTW
Soejima, ¹³ Japan	To study RTW 8 months after MI in relation to psychological and clinical variables in Japan	First-time MI, men <65 years, in full-time job previously	134	54.3	Via mailed survey /telephone: RTW on average 8 months after infarction	Standard medical treatment	82.9	Age, depression, perception of health, difficulty in managing stress but not infarction size determine RTW
Wiklund, ¹⁴ Sweden	To study factors that predict RTW 2 and 12 months after MI	Male patients <60 years, working before MI	201	<60	Via mailed survey/ telephone: return-to-work 2 and 12 months after MI	Standard medical treatment	75	Importance of psychological factors in RTW. Patients indicated causal association between work and MI

The prevalence of depression during the care period and worry concerning one's own health were predictive of lower return to work. Smith et al¹² found in a study from the US that individuals with higher socioeconomic status had a greater chance of returning to work: 72% of all patients returned to work, a higher number in those with high socioeconomic status.

Interventions

Dennis et al⁴ showed that advice from a cardiologist at a teaching hospital to the patient's family physician could shorten sickness absence. The intervention group reported a shorter sick leave duration (51 vs 75 days), representing an economic gain of US\$2,102 per patient. This could not be reproduced when advice was provided by a non-hospital-based cardiologist, probably because of the selected low risk population; most returned to work within a short period.¹¹

Studies of cardiac rehabilitation programmes have been published. Bengtsson¹ could not show a reduction in sickness absence in the study group: 73% in the study group and 75% in the control group were at work one year following onset. Likewise, Hedbäck et al⁶ did not find any effect after the first year in comparison with a consecutive study group and a control group (62% vs 57%), even though regular contact was made with the workplace to reduce the duration of sick leave. However, increasingly more individuals in the control group were sick-listed, and at five year follow up significantly more remained at work among the participants of the programme (52% compared to 27% in the control group).

Froelicher et al⁵ offered three alternatives for aftercare: participation in an exercise group, exercise including counselling or only standard aftercare. In this study from the US, only a few were sick-listed and 94% returned to work after six months regardless of the design of aftercare.

The review has shown that at least half of the patients following MI can return to work within the first year. The duration of sick leave is influenced mainly by psychological and social factors such as depression or self-confidence, low educational level, physically demanding work and dissatisfaction at the workplace. The outcomes of aftercare programmes and counselling are uncertain as regards return to work.

Sick leave following PCI or CABG (see Table 2)

Twenty-one relevant studies were identified in the area of sick leave/return to work. As with MI studies, there are three main groups: descriptive, predictive and interventional regarding both type of coronary artery intervention and aftercare. In three studies, the outcome is described during the first year following the intervention, and six studies investigated the predictors for return to work following the intervention. Seven studies compared the results between patients after PCI or CABG, and four studies described the outcome of rehabilitation programmes. One study compared different strategies for an acute coronary syndrome.

Outcome after CABG/PCI

Two studies describe the outcome following surgery: in one five

year follow up of a cohort of 123 CABG patients in England, Skinner et al³⁴ found that 84% had returned to work one year following the operation. Half (49%) were still working after five years. A larger percentage of sick-listed individuals among the CABG patients aged <45 years were described by Noyez et al³¹ in the Netherlands: 60% were working after one year.

Among patients following an uncomplicated PCI in Australia, 73% were already at work within six to eight weeks. The duration of sick leave was 25 days.³⁰ After one year, 79% of all patients were still working.

Predictors

Two studies have shown similar findings. According to Lundbom et al,²⁷ higher age, long duration of the disease prior to the intervention, previous MI and physically demanding work predict lengthy sick leave. Patients who returned to work had a significantly shorter waiting time and sick leave prior to surgery than patients who were placed on disability pension. Caine et al¹⁸ showed that in waits exceeding six months, more than half of the patients ended up outside of the labour market after PCI/CABG.

Boudrez et al¹⁶ showed that patients' motivation to return to work and the conviction that they are able to manage it had the greatest impact on return to work. In this study, patients returned to work on average after 15 weeks. From the other studies following CABG, Bryant et al¹⁷ and Gehring et al²¹ showed that lower educational level, female gender and poor self-confidence played a negative role.

After successful PCI, Fitzgerald et al²⁰ showed that 59% had returned to work after one month and 87% after one year. Even here, the patient's desire to return to the job was of major importance. Despite a successful procedure and good physical ability, the patients who remained on sick leave lacked self-confidence about their possibility to return to work.

Differences between PCI and CABG

Two randomised, controlled trials (RITA33 and BARI35) compared dilation to surgery in terms of the duration of sick leave. In the BARI study from the US, Hlatky et al²² described an 82% return to work in both the PCI and the CABG groups, although patients had a substantially shorter sick leave following PCI (5 vs 11 weeks). After five year follow up, there were no differences between the groups. Half of the individuals in the PCI group had undergone a CABG.³⁵

In the RITA study from England, Pocock et al³³ reported similar results despite certain differences in the inclusion criteria, compared to the BARI study. There was no difference in the number of patients that returned to work from five months up to three years following intervention. Initially, there was a shorter sick leave period in the PCI group: 25% vs 39% returned to work after one and two months, respectively, compared with 9% after two months in the CABG group.

Four studies compared PCI and CABG, but without randomisation. In the US, Holmes et al²⁴ compared the outcome following coronary angiography where treatment was PCI, CABG or medication alone depending on the indications and coronary

Table 2. Studies included – PCI and CABG

Author and country	Aim	Focus of study	No.	Mean age distribution	Type of sick leave data	Intervention	Return-to-work (%)	Results
Boulay, ¹⁵ Canada	To compare a rehabilitation programme vs standard treatment after CABG, predictors for RTW	Men <60 years, working before CABG	121: 59 vs 62	48.4 vs 50.7	Via an examination one year after CABG	Combined rehabilitation programme vs standard after care	92 vs 89	No difference between the groups. Length of sick leave before CABG, physical strain at work, other disease, education, angina and symptom duration were predictive for RTW
Boudrez, ¹⁶ Belgium	To study RTW 1 year after CABG in relation to psychological, social and clinical variables	Consecutive group patients after CABG <60 years	137	50±6	Via mailed survey/telephone: return-to-work 12 months after CABG	Opportunity to participate in rehabilitation programme (48.5%)	80.8	Positive expectation about work, physical strain, stress and other somatic symptoms were predictors
Bryant, ¹⁷ England	Predictors for RTW after CABG	Consecutive group men after CABG ≤65 years	79	≤65 years	Via patient interview 3 and 12 months after CABG	CABG	57	37% RTW at 3 months, 57% at one year. Work before CABG and social class predictors
Caine, ¹⁸ England	Predictors for RTW after CABG	Consecutive group patients after CABG <60 years	100	51±6	Via mailed survey/telephone: RTW 3 and 12 months after CABG	CABG	73	Predictors: working before operation, length of waiting time and remaining physical limitations
Engblom, ¹⁹ Finland	RCT of cardiac rehabilitation vs standard treatment after CABG with RTW as main parameter	Consecutive group men after CABG <65 years	125: 66 vs 59	52 vs 51±6	Via patient interview 6 and 12 months after CABG	Combined rehab programme (exercise, psychosocial support) vs standard treatment	56 vs 38	Patient views on work capacity, functional class, desire to RTW and sick-leave duration before CABG were predictors
Fitzgerald, ²⁰ US	Predictors for early RTW after first time and successful PCI	Patients successful first-time PCI, working before the intervention	82	52±9	Questionnaire and patient interview at 1 and 6 months after PCI	PCI	87	At 1 month 59% RTW, 87% after 6 months. Patients with high self-efficacy RTW earlier
Gehring, ²¹ Germany	Predictors for RTW after CABG	Consecutive series of patients after CABG, working before op	249	53.4	Questionnaire 16 months after angio and on average 1 year after CABG	CABG	44.3	37% (disability) pension and 17% sick-listed after 1 year. Predictors: symptom free and work capacity post-op, degree of revascularisation; also work-related factors
Hlatky, ²² US	RCT of PCI vs CABG in patients who had a job before the intervention, subgroup from BARI	Patients who worked before PCI/CABG	409: 192 vs 217		During 4 years, every third month detailed info on type and level of work	PCI vs CABG (part of BARI study)	82 vs 82	PCI patients on average returned after 4.9 weeks vs CABG patients after 10.9 weeks
Hofman-Bang, ²³ Sweden	Cardiac rehabilitation at special rehab centre vs standard treatment after PCI	Patients from a consecutive series successful PCI <65 years, working before the intervention	87: 46 vs 41	53±7	Patient questionnaire 1 and 2 years after randomisation	Stay at rehabilitation centre including long-term follow up vs standard treatment	74 vs 78	After 2 years: 68 vs 61% RTW. No significant differences in RTW or quality of life
Holmes, ²⁴ US	RTW in 3 groups post-PCI: successful vs unsuccessful with later CABG vs unsuccessful with later conservative therapy	Patients after PCI: successful vs unsuccessful + CABG vs unsuccessful + medical therapy	1,150	53.7	Questionnaire on average 18 months after PCI	CABG or conservative therapy if PCI unsuccessful. No randomisation	70.4 vs 65.4 vs 61.8	In the group <60 years, 81-86% RTW. On successful PCI RTW after average 7 days, after CABG 73 days, after conservative therapy 13 days

Table 2. Cont'd

Author and country	Aim	Focus of study	No.	Mean age distribution	Type of sick leave data	Intervention	Return-to-work (%)	Results
Janzon, ²⁵ Sweden	RCT of invasive vs non-invasive treatment for unstable coronary disease	Patient with unstable coronary disease: invasive vs non-invasive	933: 464 vs 469	37-65	Loss of working days before RTW as part of health economic analysis	Early angiography vs standard conservative examination process	n/a	Sick leave on average 102 days for the invasive part vs 122 for the conservative part
Laird-Meeter, ²⁶ the Netherlands	Comparison between non-randomised groups of PCI and CABG patients as regards RTW	Men <60 years after PCI or CABG	125 vs 94	51 vs 52±6	Via mailed survey/telephone: return-to-work 1 year after PCI or CABG	PCI or CABG depending on indication, non-randomised	96 vs 83	53/55 PCI patients RTW 49/59 CABG patients. Predictors: work ability before PCI/CABG, age, remaining angina after operation
Lundbom, ²⁷ Norway	Predictors for RTW after CABG	All survivors CABG patients with job before CABG	196	57.8: 36-69	Median follow up with questionnaire after 32 months (19-52)	Standard treatment	49	Sick leave duration and waiting time before CABG affects RTW, as does age, type of job, duration of disease history and previous infarction
Mark, ²⁸ US	Observation study of patients after coronary angio treated with PCI, CABG or medication alone	Consecutive group for coronary angio, <65 years, with job before the study	1,252: 312 PCI vs 449 CABG vs 491 med	54: 46-60	Via mail survey/telephone: RTW 12 months after angio	3 groups: PCI, CABG or conservative therapy	84 vs 79 vs 76	No significant differences in 1 year follow up. Subgroup analysis: RTW median 18 days after PCI, 54 days after CABG and 14 days for medical treatment alone
McGee, ²⁹ Ireland	Comparison between non-randomised groups of PCI and CABG patients regarding RTW	Consecutive group patients after PCI vs CABG	119 PCI vs 112 CABG	53.9±7.3 vs 55.9±5	Via mail survey/telephone: RTW 6-18 months after op	2 groups: PCI or CABG, non-randomised	68 vs 59	No significant differences but PCI yielded higher percent early RTW: 8 weeks post-op: 39 vs 12%
McKenna, ³⁰ Australia	Observation study of patients after PCI	Consecutive group patients after uncomplicated PCI	209	56: 30-78	Home visit or mail survey 6-8 weeks after PCI and 1 year after PCI	PCI	79	119 working before. 73% back at work in control 6-8 weeks, median time 25 days. Median for return to normal social life 14 days
Noyez, ³¹ the Netherlands	Long-term follow up of younger patients after CABG	Consecutive group patients after CABG, <45 years	167	41.7±3	Register, questionnaire and telephone, follow up to 10 years	CABG	59.5	131 in normal job before, only 78 of these RTW
Perk, ³² Sweden	Case-control study of cardiac rehabilitation after CABG	Consecutive group patients after CABG vs matched control patients from region	147: 49 vs 98	57±7 vs 57±7	Data via patient visits, records and surveys	Combined cardiac rehabilitation programme vs standard treatment	59 vs 64	No difference between the groups. In both groups long wait for CABG and long sick leave before operation
Pocock, ³³ England	Compare RTW up to 3 years after PCI or CABG in RCT	Participants in RITA trial: sub-study of men ≤60 years PCI vs CABG	963: 483 PCI vs 480 CABG	<60	Patient interview and questionnaire after 1, 6, 12, 24, and 36 months	PCI vs CABG in cases where anatomy was comparable for both interventions	48.2 vs 52.3	No difference 3 years after operation. However, differences in early RTW: PCI: 25 vs 39% 1 vs 2 months post-op; CABG only 9% 2 months post-op. No difference 5 months after operation
Skinner, ³⁴ England	5 year follow up of consecutive patients after CABG	Consecutive series of patients after CABG	353	57.2±7.3	Patient visits after 3, 6, 12 and 60 months	CABG	84	123 working before: 36% RTW after 3 months, 84% after 1 year and 49% after 5 years
The BARI Investigators, ³⁵ US	5 year follow up of patients randomised to PCI or CABG	Patients included in BARI study; only those working before PCI/CABG	801: 374 PCI vs 427 CABG	61.8 vs 61.1	Patient visits after 4-14 wk, 6 months, 12 months, thereafter annually to 5 yrs	PCI versus CABG	69 vs 72	At visit 4-14 weeks: 55% PCI RTW vs 36% CABG. No differences at later measurement points

anatomy. No difference was found between these three alternatives; 62-70% were at work after 18 months. The short sick leave periods were noteworthy; on average, 7 days after PCI, 73 days after CABG and 13 days in the group receiving conservative treatment alone.

Mark et al²⁸ found that in a group of 1,252 consecutive patients aged <65 years, 76-84% had returned to work one year following the intervention. Short sick leave periods were reported: 18 days following PCI, 54 days following CABG and 14 days following conservative treatment.

From Europe, Laird-Meeter et al²⁶ described a high level of return to work in the Netherlands among male PCI and CABG patients aged <60 years: 96% vs 83% after one year.

In a cohort in Ireland, McGee et al²⁹ found a 68% return to work in the PCI group and 59% in the CABG group 6-18 months after the intervention. More PCI patients were back at work early (after eight weeks): 39% vs 12%.

Sick leave in Sweden is substantially longer. In the FRISC II study by Janzon et al,²⁵ the mean duration of sick leave for patients who had been working before the intervention was 102 days post-PCI and 122 days post-CABG.

Interventions

The effect of cardiac rehabilitation on return to gainful employment varied. Boulay et al,¹⁵ in a study from Canada, found no difference between cardiac rehabilitation involving physical exercise and standard care: 92% vs 89% of males aged <60 years returned to work. Perk et al,³² in a Swedish case-controlled study, reported on a post-CABG population where the patients participated in a three month training programme.

Despite differences in physical performance and fewer re-admissions to hospital in the study group, no difference was found in return to work one year after surgery. Engblom et al¹⁹ assessed a similar programme in Finland: no significant differences for the cohort as a whole (56% vs 38%), but a difference in the patients aged <55 years, favouring those who participated in rehabilitation.

Recently, a randomised, controlled trial by Hofman-Bang et al²³ investigated inpatient rehabilitation following PCI where 46 patients were treated with a residential programme to change lifestyle. These patients were compared with 41 control patients who were offered standard care: despite positive effects on risk factors, there were no differences in return to work (74% vs 78%).

These studies show that most of the patients can return to work following coronary artery intervention. PCI enables shorter sick leave periods than CABG. However, in the long term, there is no difference. Among the predictors, the patients' motivation was shown to be the most important factor for return to work.

Discussion

The following methodological deficiencies were observed in studies not judged to have sufficient quality. Most of the studies have focused on return to work rather than on sickness absence. Study designs have been directed primarily at describing a medical course, not at studying sick leave. Study populations were often selected

based on age, gender and the type of hospital or rehabilitation clinic. Follow up times often varied among individuals in the same study. Drop-out was often substantial. Selection effects were seldom reported. Studies excluded, for example, students or housewives, or included only those who were full-time employees prior to onset. Information about the duration and level of sick leave was lacking as was, in most articles, a description of the interventions intended to influence or shorten sick leave.

Have the advances in cardiology within prevention, diagnosis, treatment and rehabilitation since 1975 led to any changes in sick leave? This review has shown that return to work has remained largely unchanged during the entire period. Generally, only one-third to one-quarter of surviving patients who were employed prior to onset could not return to work. It is not certain that patients would remain at work in the long term as follow up was often short.

Most of the included studies originated in the 1980s and the early 1990s. In recent years, the number of scientific studies in this field appears to have declined. Has the higher age at the onset of disease and the increasing number of elderly heart patients contributed to this?

Several studies have focused on factors that can predict return to work. Physical predictors include the size of infarction, the prevalence of complications during the acute phase, angina pectoris and heart failure following the care episode. Statistical analysis has shown a moderate correlation between the severity of the disease and return to work.

Psychosocial factors have played a major role, such as depression during and after the hospital stay, poor self-confidence or a poor perception of one's performance capacity and a lack of desire to return to work.

Demographic and social predictors include age, gender, educational level and place of residence, as well as various work-related factors. Some differences exist in the predictors for MI patients and PCI/CABG patients. Some of the PCI/CABG patients do not have an acute onset and, hence, are at risk for a longer waiting time for angiography and subsequent interventions. The duration of waiting time is shown to be of importance.

Sick-listing practices for heart patients vary considerably among countries due to various factors, e.g. different designs for sickness insurance, labour market conditions and sick-listing traditions among physicians. In Sweden, sick leave of at least three months is common after MI or CABG, and barely shorter following PCI.²⁵ In several European countries and the US, the median duration of sick leave is 60 days following MI and CABG, while sickness absence after PCI is several weeks at most. Is there a reasonable explanation for the relatively lengthy sick leave in Sweden, for example waiting time prior to PCI/CABG? Is there a need for more distinct European guidelines for sick-listing of cardiac patients?

Conclusion

This review has shown that following CAD, the majority of patients return to their previous jobs, although several leave the labour market prematurely. Advances in emergency care have improved

the medical prognosis, but the social prognosis, i.e. the opportunity to return to work, appears to remain unchanged over the past decades. Unfortunately, good quality studies are not available to provide a basis for interventions that can reduce sickness absence.

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