

# Changes in smoking habits in men under 65 years after myocardial infarction and coronary insufficiency<sup>1</sup>

D. R. Hay and Sarah Turbott

From the Cardiology Department, The Princess Margaret Hospital, Christchurch, New Zealand

*Of 370 men under 65 years with acute myocardial infarction, 74 per cent were smokers at the time of hospital admission. When interviewed up to 2 years later, the proportion of smokers among the 296 survivors had fallen to 44 per cent. The number smoking more than 20 cigarettes a day fell from 137 (37%) to 18 (6%), and 38 of the former group gave up completely. At least half the survivors were able to make some reduction in their smoking.*

*In a smaller group of 59 patients with acute coronary insufficiency, the percentage of smokers dropped from 75 per cent to 60 per cent.*

Cigarette smoking is widely held to play some part in the aetiology of coronary disease, and it is common practice for physicians to advise patients suffering from coronary disease to give up or reduce their smoking. An opportunity to assess the extent to which patients modified their smoking habits after a hospital admission was afforded during a study recently carried out to investigate problems in rehabilitation (Hay and Turbott, 1970). The group studied was a selected one and the information obtained does not allow conclusions to be reached about the effect of changes in smoking pattern on long-term prognosis, though this is obviously something that demands an answer.

## Methods

The patients investigated included 370 men under the age of 65 years who were discharged from Christchurch and The Princess Margaret Hospitals during 1966-68 after suffering an acute myocardial infarction. The diagnosis was based on the history, electrocardiogram, and enzyme changes. A smaller group of 59 patients admitted because of repeated attacks of cardiac pain, but without subsequent confirmation of certain infarction (the coronary insufficiency group), was also investigated. Fifty-seven patients or 15.5 per cent of the infarct group had died since discharge, 15 were alive but not available for interview, and

296 were interviewed. Forty-four of the coronary insufficiency group were interviewed. Smoking habits at the time of infarction were obtained from the hospital records, amplified in the case of those still living by the personal interview. The questions asked related to the type of smoking, the amount smoked, and the duration of any changes made.

The interviews were carried out from 6 months to 2 years after discharge from hospital, the mean being 14 months.

## Results

**Smoking habits at time of infarction**  
Seventy-four per cent of the infarct group were smokers on admission to hospital, 137 or 37 per cent smoking heavily, i.e. more than 20 cigarettes a day. An additional 26 had been heavy smokers for most of their lives but for various reasons had given up within 6 months of their infarct. If they are included among the smokers, the percentage of smokers rises to 82 per cent and the heavy smokers to 46 per cent. Only 14 (3.5%) patients smoked pipes, 2 smoked cigars, and a quarter of the cigarette smokers 'rolled their own'. These figures are summarized in Table 1.

In the 59 coronary insufficiency patients, the percentage of smokers was similar (75%) but rather fewer were heavy smokers (27%) and more were pipe smokers (7, or 12%).

**Smoking habits at time of follow-up** An analysis of the smoking habits of the 296

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TABLE 1 *Smoking habits of men under 65 years at time of infarction*

	Number	Percentage
Non-smokers	96	26
< 10 cigarettes a day	13	3.5
10-20 " "	110	30
> 20 " "	137	37
Pipe	14	3.5
Total	370	100

infarct patients personally reviewed is presented in Table 2.

Eighty-six patients or 29 per cent had given up completely, including 38 who previously smoked more than 20 cigarettes a day, and another 73 were smoking fewer. In other words, 159 or over half the infarct patients had improved their smoking habits. Patients are sometimes advised to change to cigars or pipes, but only 10 did this and only 1 patient admitted to smoking more cigarettes. It is obvious that most patients had been ordered to stop smoking, for 82 per cent of the original smokers who were alive at the time of follow-up had given up for a period, though only 44 per cent of these had been able to maintain complete abstinence.

In summary, at the time of review 44 per cent of the infarct patients were still smokers compared with 74 per cent before, and only 6 per cent were heavy smokers compared with the earlier figure of 37 per cent.

In the coronary insufficiency group only 5 out of 45 patients (11%) had given up completely and the number who were non-smokers when interviewed was 40 per cent com-

TABLE 2 *Present smoking habits of men patients under 65 interviewed after a myocardial infarction*

	Number	Percentage
Always non-smoker	48	16
Given up completely	86	29
Smoking fewer	12	4
Smoking same number	23	8
Smoking more	0	0
Gave up temporarily, now smoking fewer	61	21
Gave up temporarily, now smoking same	21	7
Gave up temporarily, now smoking more	1	< 1
Gave up temporarily, now changed to pipe or cigars	9	3
Now smoking pipe or cigars	1	< 1
Heavy in past - gave up before admission	34	11.5
Total	296	100

TABLE 3 *Period during which smoking was given up completely*

	Number		Percentage	
	Infarct group	Coronary insufficiency	Infarct group	Coronary insufficiency
Duration of admission	19	1	6.5	2.0
1-4 weeks after discharge	20	7	7.0	15.0
5-8 " " "	11	3	3.5	7.0
8-12 " " "	11	3	3.5	7.0
> 12 " " "	38	4	13.0	9.0
Given up completely since discharge	87	5	29.0	11.0
Not given up at all	31	9	10.5	20.0
Not applicable (non-smokers)	79	13	27.0	29.0
Total	296	45	100	

pared with 56 per cent for the infarct group. This point is further emphasized in Table 3, which compares the infarct and the coronary insufficiency groups in regard to the periods for which smoking was given up completely.

**Smoking habits of patients who died after discharge** It was not possible to document the smoking pattern after hospital discharge of the 57 infarct patients who died before the follow-up review. Of this group, 18 per cent had been non-smokers on admission, compared with 29 per cent in the group that survived.

The proportion of heavy smokers on admission among the patients who died (40%) was similar to that among the survivors. Of those patients who at the time of infarction were not smokers, 15.5 per cent died after leaving hospital compared with a death rate of 23.4 per cent among those who were heavy or moderate smokers when admitted to hospital.

Six of the coronary insufficiency patients (10%) died before follow-up, this number being too small to allow any useful analysis.

## Discussion

This study has revealed that a significant proportion of coronary patients can be persuaded to give up smoking while in hospital and to remain non-smokers for at least a year or more. Thus, nearly a third of the infarct patients gave up completely; furthermore, the proportion of those smoking more than 20 cigarettes a day dropped from at least 37 to 6 per cent at the time of review. Those who gave up included many who had been heavy smokers and only 1 out of the 296 infarct patients questioned admitted to smoking more.

The smaller coronary insufficiency group included fewer heavy smokers and more pipe

smokers and they were less successful in giving up completely (11% as opposed to 29% for the infarct group). Perhaps the more dramatic illness of a major cardiac infarction induced a greater determination among the infarct patients to accept advice to stop smoking. Alternatively, the continuing nature of the anginal symptoms encountered by the coronary insufficiency patient may weaken his resolve to give up. Another significant factor is that 38 per cent of the coronary insufficiency patients were in hospital for only 1 week and only 23 per cent for longer than 2 weeks compared with 92 per cent of the infarct group. The longer spell in hospital allows a greater opportunity to break the habit though most physicians placed no compulsion on their patients. Indeed, an analysis of the success rate achieved by individual physicians in regard to 'smoking cures' revealed no pattern suggesting that some were more persuasive than others.

The critical question demanding a clear answer is whether alteration of smoking habits improves the outlook of a person who has had an infarct. According to the Framingham Study (Doyle *et al.*, 1964), those who give up smoking revert to the non-smoker's pattern so far as the chances of developing myocardial infarction are concerned. This may, however, be a different question from predicting what will happen when a person who has already suffered a coronary occlusion gives up smoking. Furthermore, it is difficult to separate the effects of abstinence from smoking from other therapeutic measures such as dietary changes, drug treatment, alteration in the way of life, and the fact of careful medical supervision to which the patient is likely to be subjected after the acute illness. A prospective investigation among patients with coronary artery disease often means that those patients are reviewed regularly, and this in itself may favourably influence prognosis irrespective of changes in smoking habits. Notwithstanding these difficulties, it is our intention to seek this information, as published reports so far do not provide satisfactory answers.

Doctors are in a powerful position to influence patients to break the smoking habit. They can quote the example of their own profession, which in the U.K. had increased its proportion of non-smokers by 1961 to 48 per cent compared with the general male population of 23 per cent (Royal College of Physicians of London, 1962). Similarly, in New Zealand in 1963, 60 per cent of doctors were non-smokers, with the highest proportion among the younger age-group (Department of Health, New Zealand, 1964). According to Doll and Hill (1964), the mortality from coronary disease among British doctors who have given up smoking shows a reduction but the effect takes place only slowly and over a long period of years. Nevertheless, this information impresses patients and none more than the one actually suffering from a cardiac illness. Such patients are suggestible and avid for helpful advice, and it seems reasonable, at least until proved otherwise, that this should include abstinence from cigarette smoking.

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