discharge policy, have applied the same therapeutic schedule in the treatment of arrhythmias and resuscitative technique, have accepted the same criteria for diagnosis, and are dealing with, for the most part, the same type of Scottish population. As Oliver et al. pointed out, the mortality-rate in a c.c.u. depends on the speed of admission, and the two series are again comparable: 58% of our patients were admitted within four hours of the onset of symptoms and 69% within six hours, compared with 57% and 71%, respectively, for one Edinburgh series and 49% and 67% for a later one. The matching of the two units permits a direct comparison of the results between our district-hospital c.c.u. and that of the larger well-staffed teaching hospital, and the results compare favourably. Reynell has also demonstrated the feasibility of staffing and running a c.c.u. in a district general hospital, and we agree with him that the c.c.u. has become an essential service requirement of the larger district general hospital.

Incorporating a district hospital c.c.u. within the ward area of an acute medical unit ensures that extra staff are on hand if needed in an emergency. In almost all cases a doctor was able to start definitive treatment within one minute of a cardiac arrest.

We have had no real difficulty in attracting and retaining nursing staff in the unit. State-enrolled nurses and registered general nurses are employed, and the use of married part-time staff of both categories has, to a large measure, been responsible for the stability of our nursing personnel. The nurses undergo intensive training locally by lectures, demonstrations, and in-service training. They are encouraged to take part in all discussions relating to diagnosis and patient management and are made to feel very much part of one team. This attitude of active participation has maintained a high degree of morale, and the incorporation of the unit in the general ward decreases the sense of isolation which tends to develop in larger self-contained units. The continual contact with the ward helps to overcome the inevitable tedium of the unit when beds are unoccupied or during times of prolonged inactivity.

The time delays in the admission of the patient to hospital conform closely to the experience of the community survey in Edinburgh. The intervals from the onset of symptoms to the general practitioner's visit are almost identical, but once the general practitioner has seen the patient, admission to hospital takes a median time of 55 minutes in Kirkcaldy and 110 minutes in Edinburgh.

All the subdivisions of the time delay are longer in the Edinburgh series, but the largest single difference is in the delay between arrival in hospital and arrival in the ward or c.c.u. This may reflect some difference in the mode of admission. In Edinburgh 23-1% of routine admissions are brought to hospital directly without being seen by a general practitioner, whereas the corresponding figure in Kirkcaldy is 13%. It may be that a mixed rural and industrial area served by one district general hospital has some advantages over the larger urban area. In urban areas such as Edinburgh there are a number of hospitals with a central bureau dealing with admissions, and communications between the general practitioner and the hospital unit are less direct. Traffic congestion must also add to the delay in a large urban area.

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Requests for reprints should be addressed to G. J. M.

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Occasional Survey

CANCER AMONG MEN ON CHOLESTEROL-LOWERING DIETS

Experience from Five Clinical Trials

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Summary

A comparison of the cancer experience in four clinical trials of serum-cholesterol-lowering diets with that reported in a trial at a Los Angeles veterans' institution revealed that one of the four studies accorded with the Los Angeles findings of increased cancer incidence and mortality while the remaining three had opposite results. For four studies combined (excluding Los Angeles), the estimated risk of cancer development in the experimental group relative to that in the control

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group was 0.75, and the relative risk of cancer death was 0.62. When Los Angeles is included, the relative risk becomes 1.15 for cancer incidence and 1.08 for cancer death. None of the relative risks are significantly different from unity, so that the combined results of the five studies are consistent with the hypothesis that the cholesterol-lowering diets do not influence cancer risk. Much more data are needed to determine whether serum-cholesterol-lowering diets increase, decrease, or leave unaltered the cancer risk. Combined data from the five studies show that deaths from all causes were lower, though not significantly so, in the experimental groups than in the control groups. This provides some reassurance that potential public-health benefits of these diets are not likely to be outweighed by any as yet unidentified hazards.

INTRODUCTION

Pearce and Dayton have reported excess deaths from carcinoma among veterans assigned to a cholesterol-lowering diet in a controlled clinical trial in Los Angeles.

We summarise here the cancer incidence and mortality in four other controlled diet trials and compare the results with those from Los Angeles.

MATERIAL AND METHODS

Material

The five trials were done independently and completed during the 1960s in Oslo, London, Helsinki, Faribault (Minnesota), and Los Angeles. The trials assessed the efficacy of diets which substitute unsaturated for saturated fats and reduce cholesterol intake in preventing the complications of atherosclerosis in middle-aged or older men (Table I). The Helsinki investigation tested the experimental diet in one mental hospital and the control diet in another mental hospital; the other four studies individually assigned the subjects at random to one of the control group.

At Faribault, the men were distributed equally into three experimental groups and one control group. The Los Angeles subjects, who resided at a veterans' home, were some 20-25 years older than the participants in the other four studies, and largely for this reason there were many more cancer cases recorded at Los Angeles than at the other centres: the Los Angeles study accounted for 119 of the 156 cancer patients and for 70 of the 101 cancer deaths in the five studies; the large number of subjects and long follow-up period contributed to this disproportion.

The investigation of cancer was not a part of the original design of these trials, so a special effort had to be made to enumerate cancer cases and deaths. Two of the five studies (Faribault and Los Angeles) ascertained both cancer cases and deaths during the trial and during post-diet follow-up ranging from 2 to 6 years (Table I). The Oslo and London data include cancer cases and deaths from the diet phase, but cancer deaths only from the post-diet phase. The Helsinki data are limited to diet-phase cancer deaths.

Each cancer case reported by the Los Angeles workers was confirmed by microscopy, but cancer cases in the other studies were not always confirmed histologically. All forms of malignant neoplasm except skin cancer have been included in this report. (11 experimental and 14 control men from the Los Angeles study and 1 Faribault experimental man developed skin cancer.) Of the 162 cases of malignant neoplasm included in this report 141 were carcino...
cinoma, 12 were sarcoma, and 9 were unspecified types. Except for skin cancer, multiple cancer in the same individual was rare (6 patients only). An individual with multiple cancers was counted only once as a cancer patient.

Many of the Los Angeles experimental group cancer deaths were among men who had not adhered closely to the diet. Pearce and Dayton felt that this reduced the possibility that the experimental diet caused the excess cancer deaths. These deaths are included here.

**Statistical Analysis**

Because cancer can have a long subclinical course we have included cancer data from the post-diet phases. For each study, and separately for the cancer patients and the cancer deaths, the estimated relative risk (R) and chi-square (one degree of freedom) were calculated. The relative risk was estimated by dividing the cancer incidence in the experimental group by that in the control group. A relative risk greater than unity indicates an excess cancer risk and a relative risk less than unity a decreased cancer risk for the men on experimental diet. Chi-square determines whether the relative risk differs significantly from unity (i.e., whether the confidence interval excludes R = 1).

The studies were combined into two groups: four studies excluding Los Angeles and five studies including Los Angeles. For the combined data the following statistics were calculated: Woolf's interaction chi square, which tests for heterogeneity of the relative risks from the several studies; the Mantel-Haenszel chi-square (one degree of freedom) test; the estimated combined relative risk, R, and a 95% confidence interval for R by the method of Gart. We compared the experimental and control groups in each study on two factors strongly associated with cancer risk—age and cigarette smoking. Detailed data were obtained from Oslo, London, and Los Angeles, and comparability on the two factors jointly was exceedingly close. When age and cigarette smoking were included as covariates in calculating relative risk of death and chi-square by the Mantel-Haenszel method, it did not appreciably affect the results (table 11).

The Helsinki series was also closely matched for age and cigarette smoking between experimental and control men. Cigarette smoking, though not age, was used as a stratifying factor in randomising the Faribault men, and the various treatment groups are indeed similar with respect to cigarette smoking; Faribault age comparability data are not readily available.

**RESULTS**

The numbers of participants are shown in table I, with cancer patients and deaths in table II and combined analyses in table III. Los Angeles and Oslo show excess cancer incidence and mortality for the experimental-diet group, while London, Helsinki, and Faribault show deficiencies of cancer patients and deaths for this group. In the London study there were 8 cancer deaths in the control group and 1 in the experimental group, which results in an estimated relative risk of 0.12 (P < 0.05). None of the other results are significant (P > 0.10).

The Woolf test yields nonsignificant chi-square values, indicating that, while the calculated relative risks range from 0.24 to 1.43 for incidence and from 0.12 to 1.40 for mortality, evidence for lack of homogeneity is not strong. For both incidence and mortality, the estimated combined relative risk is less than unity when Los Angeles is excluded and greater than unity when Los Angeles is included. In each case, however, the confidence intervals include unity by a comfortable margin—and this is confirmed by the low values of chi-square—indicating that the combined results are consistent with the hypothesis that the cholesterol-lowering diets do not influence cancer risk.

**DISCUSSION**

A carcinogen can initiate the development and/or accelerate the course of cancer. If diet initiates cancer, this would manifest in increased incidence, while accelerated progression could result in increased mortality. We investigated both incidence and mortality.

Tables II and III focus on the combined data from the diet and post-diet phases. Table II also separates data for the two phases, and it is clear that the post-diet data are too meagre for meaningful separate analysis and that the diet-phase data alone lead to the...
same impressive experimental versus control contrast for the diet phase is for the Los Angeles deaths—33 experimental and 20 control deaths (R = 1.64, 0.05 < p < 0.10). However, the cancer hypothesis was not the one that Dayton and Pearce set out to test—it was one suggested by the data, and, as these workers pointed out, "Tests of significance ... made after scrutiny of data will tend to overstate the significance of observed differences ."1 Hypotheses suggested by experimental data require independent tests for proper evaluation.

For an independent test of the cancer hypothesis suggested by Pearce and Dayton's results, the Los Angeles findings were excluded from the first combined analysis in table iii. This produced estimated relative risks of less than unity for both incidence and mortality. The second combined analysis included the Los Angeles results and produced estimated relative risks greater than unity. All the confidence intervals stretched either side of unity, indicating that much more data are needed to settle the diet/cancer issue. So far, however, the evidence does not support the hypothesis that cholesterol-lowering diets are carcinogenic.

The ultimate question to be asked of serum-cholesterol-lowering diets is, are lives being saved or endangered? Total mortality (i.e., mortality from all causes) is, therefore, a critical endpoint. Four of the studies (including Los Angeles) show an estimated relative total mortality risk for the diet phase of less than unity (table iv). The combined relative risk for the diet phase is 0.85 (x² = 2.29, 0.10 < p < 0.20), indicating a 15% lowering of total mortality for the men on diet. Three of the studies (Oslo, Faribault, and Los Angeles), in addition to diet-phase deaths, also recorded post-diet phase deaths, and the inclusion of these increases the estimated combined relative risk from 0.85 to 0.93 (x² = 0.47, 0.30 < p < 0.50).

Although the relative mortality risks of 0.85 and 0.93 are not significantly different from unity, indicating that the life-saving potential of serum-cholesterol-lowering diets is not proven, they do provide some reassurance that potential health benefits of these diets in men of these ages are not likely to be outweighed by any as yet unidentified hazards.

We thank Dr. S. Dayton and Dr. M. Pearce and Dr. J. A. Heady of the Medical Research Council Research Committee for making their data available in great detail, and Mrs. Alroy Smith for the calculations in table iii.

Requests for reprints should be addressed to F. E.

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Conferences

PROBLEMS OF COMMUNICATION

A conference on this subject was held at Cambridge on July 10-11 by the Medical Association for the Prevention of War.

BLOCKING COMMUNICATIONS

Dr. Elisabeth Shoenberg suggested that there were three main categories of communication. The first was communication within the self: though often secret, obscure, and bewildering, this was of fundamental importance and had a decisive influence on communication with other people. The second was interpersonal communication: in this we found the image of our selfhood and the answer to the question—what am I? The answer was gradually built up from the way others communicated to us their sense of what we were. The third type of communication was the institutional: we become identifiable members of an age-group, an occupation, a social class, a nation, and, as a citizen of the last, in wartime liable to kill. "But who said I was a killer? My victim said it." This type of communication was often intolerable and could be blocked by dehumanising the enemy into "gooks", or vermin, or mere statistics for a body count; killing from afar made it easier. To do evil we must either believe it to be good or so block and distort the feedback that the evil act seemed different from what it really was. Communications were institutionalised by the framework of organised society, often crushing individual development and new ideas. This made life easier and safer for autocrats. In a more flexible society initiative and innovation to cope with changing situations had more opportunity to develop and even the hierarchy could adopt more democratic forms. Meaningful participation, however, depended on a free flow of information with a constant feedback, leading to modifications and further feedback in a never-ending cycle. The trouble here, however, was that when communications were really opened up, the things that flowed were often too disagreeable and the tendency soon developed to hide and reject them and to lie to achieve this. Unblocking communication, therefore, was not enough—the problems it revealed had to be dealt with whether they were those of the mentally ill or a sick society.

The main point emerging from the discussion was that hierarchy in any society gave rise to fear based on dominance. Authoritarianism was designed to block communication coming from below and to this end employed various anticommmunication devices—an emphasis on secrecy, an insistence on the necessity of not "rocking the boat", making life difficult for those who stepped out of line.

DOCTORS AS COMMUNICATORS

Dr. Martin Bax said that doctors, who were not specially trained as communicators, were naturally enough often not very good at it. Some even failed to heed the feedback, verbal or non-verbal, from their own patients, or missed altogether the essential question the patient never asked but wanted answered. Often, too, doctors were poor at communicating with one another or with other groups even though the increasing complexity of medicine rendered this ever more necessary. Communication of medical