

# Medical research — a comparative study of the situation in the RSA and in certain other countries

A. J. BRINK

## Summary

Research as a whole, with medical research as part thereof, is supported by organizational systems which differ in different countries. The basis for research support is nearly always one of two types: projects (short-term research) conducted by individuals, or programme research (a more extended form) carried out by a number of people in a defined field and under the direction of a person uniquely suited to lead the research. The other important form of research undertaking is one of national importance which assumes dimensions necessitating the creation of specific facilities in the form of buildings, research equipment and a staffing establishment (usually termed an 'institute').

Certain aspects relating to medical research as seen in other countries could well be adapted to our own needs, such as the introduction of research work communities (as found in Holland), and the establishment of priority research programmes in order to develop areas of neglect (as done in Germany).

Adjustments can also be made to our training programmes and bursary schemes. In particular, attention can be paid to the re-employment of active research workers who have reached retirement age, and to the creation of full-time research posts in different categories at universities.

In whatever manner our available research funds are calculated for comparison with those available elsewhere, whether based on money available *per capita*, size in relation to other research programmes or percentage of gross national product, the position of South Africa appears to be embarrassingly inferior.

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There are various systems whereby research as a whole, and medical research as a part thereof, is conducted. The system followed is often based on historical circumstances, resulting in substantial organizational differences between the systems in different countries. This does not necessarily mean that one system is better than another, but rather that a particular system works most efficiently in the circumstances and for the needs of the country concerned. Yet there are still basic similarities in the manner whereby research is administered, supported and per-

formed in all countries. Experience has shown the value of some aspects of existing systems which can be incorporated into our own system. There are also impracticable aspects which can be avoided if they have not already been incorporated into our own system.

The way in which medical research is conducted in various countries which are culturally and economically similar to the Republic of South Africa was investigated. Discussions were held with representatives of research organizations in Canada, the USA, Argentina, Australia, New Zealand, the UK, Holland, Belgium, West Germany, France and Switzerland.

## Common nucleus of medical research

In all the above countries research is accepted as being an essential part of the field of medicine without which health service standards could not be improved and satisfactory training and education provided. It is emphasized that research in existing academic and training institutions must be extended, and that long-term research, in-depth research and greater national needs call for the creation and maintenance of specialized institutions with their own facilities, laboratories and staff as a component of the medical research effort, this type of institution usually being called an 'institute'.

People rather than facilities or equipment are regarded as the key to successful and productive research. This view results in an emphasis on the investment of research funds in people, in the establishment of active research training programmes (especially at post-doctoral level), and in the provision of senior full-time research posts.

## The management of research

In all the countries visited State-supported research is performed by organizations which function independently of Government departments. However, the responsibility for research rests in a political head via whose department the work of the research body is channelled. This is usually the Department of Education and Science, but can also be the Department of Health. In France the Director-General of the research organization, INSERM, is directly responsible to the President.

Australia is the only country visited in which the research body forms an integral part of the Department of Health. The department is responsible for all administration, and administrative costs are considered a departmental expense. Medical research is thus subject to the regulatory control of a State department. The administrative staff gain experience in the administration of medical research by rotating through this division as through other divisions of the Department. There is therefore little continuity of administrative function in the research body. The National Health and Medical Research Council exercises overall control as regards medical research.

Government departments such as a Department of Health may possess their own research funds for their own needs. These funds are usually very limited and are, as a rule, used for contract

**South African Medical Research Council, Parowvallei, CP**  
A. J. BRINK, M.B. B.CH., M.D., F.R.C.P. (LOND.), D.S.C. (MED.), *President*

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research by other bodies. Experience in the UK has shown that it is less effective to channel research funds through the Government department. After release of the Rothschild Report in 1974, 25% of the budget of the British Medical Research Council (MRC) was transferred to the budget of the Department of Health for its research needs. In 1981 these funds were returned to the MRC so that this body could continue to carry out research in the interests of the Department of Health, as was earlier the case.

In some countries medical research is performed under the auspices of one or more co-ordinating bodies for research in a wider field. In Canada the MRC is now 12 years old, having become independent of the Canadian Scientific and Industrial Research Council, under the auspices of which it previously functioned. This is analogous to our own situation, medical research in South Africa having been funded through the Council for Scientific and Industrial Research until 1969.

In Holland applied medical research is completed under the control of the TNO ('Applied Research Organization'), and essentially comprises the 'institute' form of research. 'Pure' research is administered by FUNGO, a body within the ZWO (the 'Pure Scientific Research Organization'). In Germany institutional research is undertaken by the Max Planck organizations, while research within academic bodies is controlled by the co-ordinating research body, the Deutsche Forschungsgemeinschaft (DFG). The latter body controls all forms of research in West Germany and is a comprehensive body which includes a General Assembly comprising a Senate, a Board of Trustees, and numerous other auxiliary committees. In Switzerland there is also a co-ordinating research body, the Schweizerischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung, which administers medical research under its Division for Biology and Medicine.

Our own system, which contains a statutory body for medical research, is similar to those of Canada, the UK and New Zealand, and also close to that of the USA with its National Institutes of Health (NIH).

Belgium has two entirely separate MRCs — one for the French population and the other for the Flemish population. The total medical research budget is divided in the ratio Flemish — 48% and French — 52%. The various commissions which function in this system consist of representatives of both population groups but make separate recommendations for the individual needs of the Flemish and the French.

The composition of the South African MRC (SAMRC) with its 14 members, each nominated in his personal capacity on the basis of exceptional experience and knowledge in the field of medical or related research, and not as representatives of any organization, is unique. Such a system is least vulnerable to being influenced by a clash of interests. There is, however, a need to obtain the views of non-medical scientific members, and the SAMRC Act of 1969 has been amended in order to make this possible.

In all of the countries examined the systems make provision for auxiliary committees which are constituted and function in various ways. Some organizations create many more committees for their needs than do others. For example, in the Australian system there are at least 100 committees and working groups, compared with our approximately 50 committees. However, needs differ in different parts of the world. With the exception of an outline of the concept of an advance planning committee, this aspect does not need further elaboration.

### Advance planning committee

Both the Canadian MRC and the MRC of New Zealand benefit greatly from a committee established to determine research needs and to make recommendations for the advance planning of research of national interest, as well as relating to the

individual needs of researchers. Respected scientists who have had exceptional opportunity to acquire knowledge in a wide field and who can shape attitudes and provide insights regarding research are asked to serve on such a committee.

The SAMRC has also established a committee of this type. Such a committee can even, as in the case of the Canadian Advance Planning Committee, consult the public by referendum as to where research is most needed. In this manner it was determined that, according to the Canadian public, the highest research priorities were perinatology, improved clinical application of existing knowledge, biotechnology, and gerontology. This finding was so convincing that the Canadian Government made available large additional amounts of money for the development of these fields.

## Ways in which research is supported

### External research (grants)

#### Project research (short-term research)

Funds are granted to an individual for a specified period for an approved project. This form of grant is common to all countries. It is the only form of support granted by the Canadian MRC, and is the cornerstone of support for all organizations. The grant is made to researchers at existing academic and educational institutions and is usually awarded for not longer than 3 years per project. It includes funds for running expenses, research assistants and equipment.

It is assumed that basic laboratory or clinical facilities already exist and that the institutions concerned will also make a financial contribution. The feeling that support will not be given by the awarding body unless the mother institution also makes a contribution is growing stronger. It is feared that the universities, experiencing ever more financial restrictions, will use funds intended for research for other purposes, and therefore that research will suffer unless the universities are also obliged to provide research support.

**Evaluation.** Project research is supported only after thorough peer evaluation. The mode of this evaluation varies, but the principle is applied without exception. Some countries depend heavily on foreign advisers, as in Switzerland. Others have a variety of committees for this purpose. Evaluation is always made on the basis of well-documented applications, but new applicants and new projects are often investigated *in situ* and a recommendation is made only after a personal interview.

**Review.** Another principle applied consistently, albeit in different ways, is that of peer review of the research. Written reports by experts in the field are always a component of this. On-the-spot investigations by review committees are not routine, but do occur on a selective basis in special circumstances.

In South Africa there is room for improvement in the evaluation of applications for project research. At present the well-documented applications are evaluated firstly by a selection committee of the institution at which the researcher is located, and after that by an Awards Committee of the SAMRC. Persons representing specified disciplines (limited) and institutions serve on this committee.

This selection cannot really be seen as being peer evaluation. A system with more narrowly directed committees to evaluate applications and especially new applicants, preferably *in situ* and after a personal interview, appears desirable. On the other hand, our system of reviewing every individual researcher's work every 2 years is a valuable and profitable one not found in other countries.

#### Programme research

This type of support is intended to recognize scientific achievement and to support research over a longer period and on

a wider basis than project research. Funds are granted to the head researcher of a team in order to achieve specific aims linked by a common theme. The research is conducted at institutions already having all the usual basic and routine laboratory facilities and equipment. The research is also dependent on personnel already on the staff of the host institution.

Such a system is comparable to the unit group form of research support developed by the SAMRC. MRC units and groups conduct research which is supported over a longer period and covers a wider area than does project research.

The unit concept implies that the research must be directed in a specified and limited direction by a leader with unique characteristics. The research is guaranteed support for 7 years, with the possibility of renewal. Group research is somewhat different in that a group of researchers of more or less equal status investigate a common problem. One of the group is appointed as director. Research support is guaranteed for 5 years, with the intention that after this period either part or all of the research will have developed into an acceptable clinical service or a discipline within the university. Remaining areas of research can then be conducted on a project basis.

The MRC's experience with group research was that it developed, with few exceptions, in the direction of the unit concept. The taking over or absorbing of the group by the mother institution occurs only exceptionally. This has also been the experience in the UK, from which country we obtained the idea of group research. There the universities with their limited funds could never absorb groups. Even after the British MRC permanently allocated a part of its own budget to the host institutions, the universities still could not manage to maintain the groups. On the basis of this experience, as well as our own, it was decided that group research will be phased out as it has been in Britain. Existing groups will be given the choice of continuing to exist as units, or of conducting further research as individual projects.

It is particularly noticeable that programme research is increasingly found to be a fruitful form of research support deserving further extension in the UK, Australia and New Zealand. This also applies to the SAMRC's experience with its units, these being jointly supported by the MRC and the host institutions, and encourages us to continue with this system.

The establishment of a unit is an important step undertaken only after careful evaluation by an expert committee. After considering the fully documented motivations and financial implications, the committee conducts an investigation on site, interviewing the researchers and confirming the existence of suitable space and basic laboratory facilities with the host institution. A recommendation concerning the establishment of a unit is then made to the MRC, which makes the final decision. Units are reviewed by review committees specially appointed for this purpose, and a yearly evaluation is made on the basis of progress reports. Advisers are appointed to act as consultants to the units and to keep the MRC informed of the quality and progress of the work. Use is also made of overseas advisers when possible or necessary.

**Friend at Court.** In New Zealand it has been found beneficial to have a research liaison official within the university organization. He/she is asked to act on behalf of the MRC and to carry out liaison work, distribute information, assist with the applications made by researchers at the university, and advise the MRC of needs and general problems. This person can be awarded an honorarium.

## Internal research

Research is conducted in institutions existing specifically for this purpose in all of the countries visited except for Canada, Switzerland and New Zealand. The research is supported on a permanent basis and requires its own staff. It is largely financed (often completely) by the country's research organization.

When the research, which is usually of general national interest, is conducted in its own special buildings because it covers too wide a field to be housed in existing facilities, the institutions are called 'institutes'. When the research covers a more limited area, is housed in existing facilities, is dependent on one particular outstanding person, and is financed completely by the research body, it is called a 'unit'.

The institute concept is similar to our own, although ours has some unique variations. The units differ from ours in that they are permanent and have their own staff. They are, however, comparable to our units in that they make use of a host organization's facilities, cover a limited and relatively narrow field, and are led by one outstanding person.

## Units

In France the number of units has increased so greatly that at the time of reporting there were 150 of them. This is considered too many. A great problem, which has also been experienced in the UK with its 60-70 units, is that of closing units. Experience has shown that after 15-20 years the original aims are often no longer being followed. This has also been our experience with our units and groups, which currently number 27. The activities become more service-orientated and research funds are used to provide services. The director may no longer have his unique motivating drive, or he may even have disappeared from the scene. So much has already been invested in the unit, particularly in staff members with permanent posts, that it is impossible to close the unit. In today's social climate with its demand for security and benefits, posts cannot be abolished.

In the UK about 80% of the research budget is spent on salaries; in France this figure has already reached 90%. Research funds are therefore not convertible, which is a serious problem. In South Africa about 45% of the total budget is used for salaries. However, for internal research this figure is 70%. In the UK there is a tendency to try to range units around the three large national institutes. This will result in the formation of larger organizations within which the movement and transfer of staff can take place.

When closure of a unit is considered in the UK, the unit is reviewed by a scientific review committee; if their investigation suggests that the unit should be closed, a management review committee decides on the feasibility of such a step.

In South Africa the Executive Committee of the MRC has so far been responsible for investigating and making recommendations concerning the closure of units or groups. This is usually done in collaboration with the host institution. The British example is one which we could consider following.

Australia recently adopted the unit system and three are already in existence: a Social Psychiatry Research Unit, a Health Economics Unit and an Epidemiology Unit.

It has been the SAMRC's policy since it was formed that permanent posts would not be created on its own establishment for research carried out outside of its own institutes. Instead, approved research posts are created on the establishment of the host institution, and all the costs associated with such posts, including overheads, are borne by the SAMRC. This arrangement has many advantages for the host institution. The posts are managed in the same way and carry the same conditions of service as those of its other employees, and organizational problems and employee dissatisfaction are thus kept to a minimum. The greater assurance of continuity allows the research to be more purposefully pursued. When research changes direction or ceases there is greater opportunity for internal transfers.

Our own experience has shown that it is exceptional for posts, especially those in the lower ranks, to be filled by one person for many years. The holder of a post seldom becomes redundant, but offers from elsewhere, promotions within the host institution, and losses (especially of women) owing to changes in social

status, create a problem in keeping research posts filled for long enough.

### **Institutes**

As already stated, institutes are institutions of exceptional scope and of national significance. In Britain there are 3 large national institutes. At the National Institute for Medical Research in Mill Hill, London, fundamental research in fields ranging from biophysics and neurobiology to influenza viruses, parasitology and leprosy is carried out. The aim of the Clinical Research Centre in Harrow, Middlesex, is to bring together clinical and non-clinical scientists on a multidisciplinary basis so that research skills can be applied to health problems in a hospital situation, the Northwick Park Hospital Clinical Research Centre being used for this purpose. The third institute comprises the Molecular Biology Laboratories at Cambridge. Important breakthroughs, for example the discovery of the structure of DNA, the ensuing deciphering of the genetic code, the solving of the structures of myoglobin and haemoglobin, and the development of methods to determine the sequence of DNA and RNA, have been made here. An Institute for Hearing Research has recently been established.

In Australia there are 2 large institutes, the Walter and Eliza Hall Institute and the Howard Florey Institute. In West Germany there are 28 Max Planck Institutes carrying out biological and medical research. In Holland there are 8 large institutes under the control of the TNO: Radiological, Experimental Gerontology, Primate, Environmental Hygiene and Health Techniques, Medical Physics and Preventive Medicine institutes, a Medical Biological Laboratory, and the Gaubius Institute for Biological Problems. Two further institutes fall under the Department of Health, an Institute for Cancer Research and an Institute for Public Health ('Volksgezondheid'). There is one medically orientated institute under the Department of Education and Science.

The SAMRC has its own institutes. However, only 2 of these can be regarded as national institutes in the sense that they fulfil a national research need, namely, the National Research Institute for Nutritional Diseases and the Research Institute for Diseases in a Tropical Environment. A third institute, the Tuberculosis Research Institute, fulfils a national need but has a limited objective.

Three other institutes are unique and fulfil our own special needs. Their activities are not directed towards a national health problem, but rather towards providing a national service for researchers throughout the land, as well as furthering research in their fields.

**The Institute for Electron Microscopy** possesses certain sophisticated electron microscopes and accessory equipment which, because of its high cost, cannot be duplicated. The Institute assists medical and dental researchers throughout the country.

**The Institute for Medical Literature** has access to the world's largest databanks of medical literature, and is able to obtain computerized information for researchers almost immediately. It is the only agent on the continent of Africa through which the biomedical information stored in overseas databanks, especially those in the USA, can be distributed. The SAMRC represents South Africa as 1 of 12 member countries participating in the American National Library of Medicine's world-wide information services.

**The Institute for Biostatistics** is an unusual institute which has the skill and manpower to advise researchers in the important field of statistics. It comprises the only group of people in the country able to give epidemiological studies the necessary support, and also provides training in this field by means of a postgraduate course at the Medical Faculty of the University of Stellenbosch.

These 3 institutes, which are all housed in one building complex, are dependent on computers and possess extensive computer systems. Other countries which do not possess national research services of this type express great interest in ours.

At the University of the Witwatersrand there is a Dental Research Institute run jointly by the SAMRC and the University. This institute falls outside of the usual institute concept since it is accommodated within the University and is a joint undertaking. It was decided to call it an institute owing to the wide field and permanence of the research which it covers.

The MRC had one other national institute, The National Research Institute for Occupational Diseases. This Institute was formed out of the then existing Pneumoconiosis Research Unit in 1969 because of the great need for research in this field. During the following years such a large health service component developed in the Institute that about 70% of its activities became service-orientated, and research funds were therefore used inappropriately. After a commission had investigated the situation the authorities decided that the Research Institute should become a Centre for Occupational Health which would provide services as part of the function of the Department of Health. The need for research, which had become even greater than it was in 1969, was overlooked during the process of this change. There are at present few meaningful research programmes on occupational diseases in this country. The rate of industrialization and the size of the labour force are growing at a great pace in South Africa — a situation which may have unhappy long-term consequences in view of this lack of research.

## **Other forms of research support**

### **Work communities**

In Holland a system known as work communities has developed. All researchers working in a specified field are brought together in a work community. The individual researchers are obliged to meet at least once a year to discuss their ongoing research with each other. The discussions are informal but detailed enough to allow for intelligent criticism.

Although the researchers are obliged to meet only once a year, experience has shown that they choose to do so 3 or 4 times a year because the meetings are so beneficial. Any individual researcher in the work community who wishes to make a research proposal must first submit it for discussion, and only then is the formal proposal carried further. After it has been processed by the central organization, it is referred back to the work community, which makes recommendations regarding acceptance. This system eliminates duplication, brings about greater collaboration between researchers and provides for greater stimulation of research.

### **Priority research programmes ('Schwerpunktverfahren')**

This is a system which arose in Germany out of the need to stimulate research after World War II. An amount of money is set aside for research in a field requiring a great deal of development, and is made available for 5 years with the possibility of renewal. The field of research is determined by a scientific body of the DFG and must be approved by a special committee. Scientists from all over the country can then participate in this programme. Research is carried out at different universities and institutions, each making a particular contribution to the overall effort. The group as a whole must meet at least once a year, but more often if necessary. The DFG considers this a very successful way of developing research in areas in which there are deficiencies.

## Research manpower

In all of the countries visited there is a need for medical research manpower, but nowhere is this need felt as acutely as in South Africa. Medically qualified researchers are very scarce everywhere in comparison with the number of non-medically qualified scientists. The latter group comprises 75 - 85% of the research corps. The USA holds a great attraction for medical researchers, and most of the countries visited experience a regular loss of manpower to the USA. It is noticeable that this movement is mainly one of English-speaking people between English-speaking countries. This probably arises from the use of a common language and the fact that assimilation can occur more easily as a result of the closer cultural ties.

As far as South Africa is concerned, the loss is not only to the USA but also to Canada, the UK, Australia, and Israel. A large number of South African medical scientists occupy prestigious posts in these countries. Predominantly English-speaking scientists are lost in this way. New Zealand loses some of its medical researchers to Australia as well as to the other English-speaking countries mentioned above. In an attempt to attract some of these scientists back, funds are set aside especially to support their research. This is an example which we intend to follow in South Africa.

## Exchange of scientific knowledge

Scientific meetings held in different parts of the world are well attended by scientists from all the countries visited. The SAMRC's programme of providing financial assistance for researchers attending such meetings is more generous than that found anywhere else. None of the other organizations has a fixed support programme such as that of the SAMRC. New Zealand, which like us is geographically isolated, does make some provision but on a much more limited scale.

## Visits by scientists

The SAMRC's programme for visiting scientists from overseas makes provision for different categories of visits lasting from a few weeks up to as long as a year. This type of programme is not found in other countries.

## Arranging of scientific meetings

The SAMRC's policy of arranging international scientific meetings in South Africa and providing funds for them is an activity not undertaken by other research bodies.

## Exchange agreements

The SAMRC has an agreement with Israel which provides for mutual discussions in the form of colloquia, the exchange of scientists, and collaborative research projects. International exchange agreements of this type are also found in the French system where there are no less than 13 of them. The French experience has been positive and they intend extending the system.

## Full-time research posts

Most countries are aware of the need to make research posts available, especially at universities, so that outstanding researchers are not lost. Limited provision is made for this in one way or another. The different systems, especially those in the UK, Australia, and New Zealand, are largely similar to our own but are more comprehensive. In the UK provision is made, to a certain extent, for the following:

**A research award** for researchers who reach retirement age and are still able to pursue active programmes. Our own MRC has established a grant of this type in the form of an Extended Career Award. We have already had experience of various extremely productive and outstanding researchers who have made great contributions after retirement.

**A senior research associateship** for senior researchers, which is financed by the MRC until the researcher reaches retirement age. This is intended to allow outstanding researchers to devote themselves entirely to research until retirement age.

The taking over and **financing of a researcher** already in a senior position so that he can devote his full attention to research for a period of 2 - 5 years.

The **financing of a young researcher** of outstanding promise who would otherwise be lost because no suitable position is available, for a period of 1 - 2 years at a full-time rate, until an academic post becomes available.

The SAMRC will in the future consider research posts of this type on merit.

## Training programmes

This is an extremely important facet, and all countries make funds available for the training of researchers. They do so by granting bursaries on different levels, the most important of which are post-doctoral bursaries which can be used locally or abroad for further training in a specified field of research. In other countries, as in South Africa, bursaries are made available at all postgraduate levels in suitable scientific directions. The SAMRC also awards bursaries to undergraduate students of medicine, dentistry and various scientific disciplines in order to encourage them to take up a research career.

## Health service research

Health service research concerns itself with the planning, implementation, evaluation, administration, and financing of health services and health care. It can include aspects such as prevention, health education and promotion, and rehabilitation. It is thus concerned with applied health research. Research in this field is usually seen as being a prerogative of the various departments of health, and funds are set aside on their budgets for this purpose. Since Government departments are generally not equipped for research, the work is often contracted out to a research body.

There is a need to stimulate this not very active field, and some research bodies, especially those in Australia and New Zealand, have made funds and research associateships available for this purpose.

## The financing of medical research

In South Africa the bulk of medical research is dependent upon Government funds made available through the MRC and tertiary educational institutions. Although we do not have precise figures, funds from the private sector, donations and bequests are relatively small. Pharmaceutical companies make a small contribution, usually in the furtherance of their own interests, for example for use in clinical trials or at scientific meetings of interest to the companies.

Overseas, on the other hand, large sums of money are available from sources other than the national research bodies. In Canada, for example, \$90 million was budgeted for medical research in one particular year. Over this same period funds from outside sources brought the total amount available for medical research up to \$250 million. In the UK the medical research budget is at present approximately £100 million per annum, and funds from outside bring the total to about £200 million (approximately

R400 million). In Australia the most recent budget is \$14 million for the year, and this does not include any administrative costs since these are borne by the Department of Health. Large sums are made available from other sources such as the National Heart Foundation. In the USA the NIH's most recent available budget was for \$3,85 billion, which accounts for 60% of the total medical research budget. The other 40% comes from outside sources.

Therefore, in the USA with its 200 million people, federal funds provide about R20 *per capita*. Canada's population is 24 million and this means that each year a minimum of R4 *per capita* comes from the Government, and as much as R11 *per capita* if outside sources are included. In the UK, with its population of 56 million, R3 *per capita* comes from the Government, and the inclusion of outside funds brings this up to R6 *per capita*. In Australia the Government makes at least R1 *per capita* available. New Zealand, with its small population of 3 million, has a budget of almost R5 million, and thus of R1,67 *per capita*. In Belgium (population 10 million), the MRC grants 500 million Belgian francs (R11 million) for medical research, i.e. R1,10 *per capita*. France's budget of R100 million for 53 million people is equivalent to R1,90 *per capita*. Switzerland has a population of 6 million and a medical research budget of R16,5 million, i.e. R2,80 *per capita*.

### **The position in South Africa**

In the Republic of South Africa, with a population of 26 million, only R7 million is presently available for medical research — i.e. 27 cents *per capita*. In respect of percentage of gross national product spent on medical research, South Africa compares badly with all the other countries: compare our 0,0115% with Holland's 0,15%, the UK's 0,044%, Canada's 0,027%, New Zealand's 0,03% and Australia's 0,013%.

Another way of looking at this question is to consider what percentage of the total research budget is accounted for by the

medical component. In Holland, where institute research is controlled by the TNO, this figure is 25%. In West Germany medical research makes up 30 - 40% of the funds distributed by the DFG (this excludes research by the Max Planck Institutes). Institute research of the SAMRC makes up no more than 4 - 6% of the total budget of the comparable Council for Scientific and Industrial Research in South Africa.

South Africa is clearly put to shame, no matter what method is used to consider the funding of medical research. Medical research in Europe and in all the countries visited enjoys a much higher priority and greater value than in our own case. We are forced to the conclusion that medical research in South Africa is currently given low priority and not seen as a national need. There is no guarantee that meaningful, significant research can be purposefully pursued. This is one reason why researchers with international recognition leave South Africa. Wherever one goes there are respected South African medical researchers in high research posts. 'Our potential Nobel prize winners go to other countries!'

Since the standard of medical training in this country is high, as is acknowledged overseas, it is also to be expected that our research would have depth as well as breadth. South Africa is generally regarded as a wealthy country, but when our meagre expenditure on medical research is mentioned, an embarrassing silence ensues. We have greater health problems than do the other countries visited. As regards the field of infectious diseases we are underdeveloped — in Europe and the Americas tuberculosis and parasitic infections are no longer widespread, whereas here they pose enormous and serious problems. In South Africa psychiatric diseases are very important and nutritional problems are of greater scope than in other Western countries. In addition, we have to cope with all the medical problems associated with the Western way of life, such as heart disease and cancer, often encountered in greater intensity here. These factors emphasize even more greatly the need for increased funding for medical research.