SAMJ

Editorial

Commentary and debate

From science council to health and medical research organisation — 25 years of MRC history

The Silver Jubilee of the Medical Research Council on 1 July 1994 provides a rather special vantage point in time from which to view the past, present and future of this key organisation in the health structure of our country. The early history and development of the MRC, from its modest beginnings as a committee under the auspices of the CSIR in 1946 to a fully fledged autonomous science council in 1969, has been fully documented[1-3] and does not require repetition at this stage. A holistic look at the general trends in its development — especially over the last few years — seems however to be appropriate. The previous review after 21 years by founder President A. J. Brink entitled 'Medical research: from pastime to profession'[1] describes the main events up to that point from the first, relatively unco-ordinated, pioneering efforts of a small number of amateur enthusiasts to the development of formal structures for organisation, funding and professionalisation of medical research in this country. In this role the MRC was markedly successful, enabling Brink to state: 'The most important event for promoting medical research in South Africa was the establishment of the South African Medical Research Council in 1969'. The external environment of the first 20 years was largely stable and well-disposed, the economy of the country was booming and the opinions of the voting public and political decision-makers followed international trends to create and maintain idealistic structures such as science councils and state corporations for developing our country's capacity for international participation and competition in the scientific milieu of the developed world. The amount of benefit conferred by these activities on the average voteless citizen of the country was of less concern, as were cost-benefit ratios and the amount of practical implementation of research results in the health care services.

The years since then have been characterised by acute and turbulent changes on a vast scale in the external environment of the MRC. These political, economic and demographic changes altered the situation of South Africa in the world, and that of the MRC in South Africa.

The positioning of the MRC in the mainstream of our health care system as chief problem solver, custodian of a research mentality and generator of capacity is critically important to ensure its proper acceptance and credibility among its clients and stakeholders. At the same time, practical expediency and short-term views should not be allowed to cloud the basic truth that reliable research can only be built on a strong foundation of academic excellence and true scientific expertise. Our predecessors built the MRC on these foundations and they built well. The change in perspective between the 'old' and the 'new' MRC is, however, best illustrated by the change 5 years ago of its motto from 'Scire volumus (we wish to know)' to the modern 'Shaping a healthy future'.

These new views are most conveniently embodied in the concept of 'essential national health research' (ENHR),[4] which emphasises the holistic approach to health problem solving by research linked as closely as possible to health service intervention and implementation. It has not been long since the adoption of this model by the MRC, but already many stifling interdisciplinary and occupational barriers are coming down to yield fluid multidisciplinary networks that militate against the previous compartmentalisation of our research efforts.

The integrated research portfolio is presently carried out in 7 national programmes, 4 special programmes, 2 centres and 13 units at universities and by more than 300 individual grant holders, encompassing about 1 000 highly qualified researchers with a formidable support infrastructure. This capacity, both in human and physical terms, is a precious national asset which needs fostering with care and appreciation, to continue yielding its full potential value.

It is fitting and timely indeed that at this stage in the history of our country, when we are making a new beginning in so many areas, the term of office of the present MRC Board has been completed and a new Board is to be appointed for the next 3 years. The new Board will be looked upon with great expectations, not only by the MRC as a whole, but by the broader academic and research communities as well as the other important stakeholders in the health sector. Its leadership and vision at this crucial stage will play a decisive role not only in the future of the MRC, but in the viability, quality and place of research in the health structure as a whole. We place our trust in their ability fully to realise the value of what has been achieved but, even more, what can be achieved by the management and utilisation of this valuable national asset to its full potential.

The mettle of the MRC, its role, objectives and abilities, were and are still being severely tested, but it has withstood the challenges of time and circumstances remarkably well, underpinned by the excellence of its people and by pro-active strategic planning leading to appropriate redirection and rationalisation. Times of radical change like these have always offered great opportunities, to be seized strongly and positively, to the benefit of long-term development and future prospects of the organisation. We are now in such a period with the window of opportunity beckoning us into the next quarter of a century of achievement and service in the interest of the health of our people.

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The colon as a metabolic organ

Walker[1] has for many years championed the role of diet as a cause and a prevention of disease. Working alongside Burkitt, he highlighted the strong negative association between dietary fibre intake and 'westernised' diseases of the colon. Perhaps the strongest association noted was between dietary fibre intake, stool weight and colon cancer risk.[2] However, as is often the case in medicine, the picture is not that simple. A diet high in fibre usually means a 'poor' diet, which is also low in animal products. Consequently it is not surprising that further studies have shown positive associations with animal protein and fat.[3] The other side of the coin, however, is that such diets are inevitably rich in carbohydrates.

Much excitement has arisen from the observation that fibre is not the only carbohydrate that escapes digestion in the small intestine — 2 - 20% of so-called 'digestible starch' may also be malabsorbed and enter the colon.[4] However, examination of stool carbohydrate content shows a virtual absence of carbohydrate, and studies involving intubation of the whole small intestine with perfusion of the colon with 50 g and 100 g of carbohydrate have demonstrated complete metabolism within the colon.[5] It therefore appears that neither fibre nor undigested carbohydrate contribute to the bulk of stools, but provide colonic bacteria with substrate for their metabolic needs. This is consistent with estimates of the energy requirements of colonic bacteria which suggest that at least 70 g is required per day[6] — a figure clearly in excess of the usual dietary fibre intake of 15 - 30 g/day.

So what is the purpose of colonic bacteria? Are they there simply to 'mop up' maldigested carbohydrate? Comparative physiological studies in cows and horses provide part of the answer to this question. Ruminants (e.g. the cow) have a specialised section of the stomach that does not secrete acid. It therefore becomes heavily colonised with bacteria. Undigested food is first fermented by these bacteria to produce various gases, such as hydrogen and methane, and short-chain fatty acids, such as acetic acid, butyric acid and propionic acid. In turn, these substances are absorbed and provide most of the energy required by the animal. The gases are also absorbed and then excreted in breath. The horse does the same, but the fermentation process occurs lower down the gastro-intestinal tract in the caecum — as in man. However, quantitatively humans are different, since they consume relatively lower quantities of carbohydrate, most of which is absorbed through the usual process of pancreatic digestion and absorption in the small intestine. Estimates suggest that colonic short-chain fatty acid production in man contributes only 5 - 15% of the body's energy needs.[7]

Possibly more important is the recognition that short-chain fatty acids are the chief respiratory fuels for colonic cells. Roediger,[8] in colonic tissue perfusion studies, showed that in contrast to previous belief butyrate, and not glucose, was the preferred metabolic fuel for colonic cells. Further studies by Windmueller[9] demonstrated that the amino acid glutamine was the chief fuel for the small-intestinal cells, with glucose taking third place after butyrate.

The importance of this observation was recognised when Harig *et al*.[10] demonstrated that diversion colitis, a condition that develops when the colon is separated from the intestinal stream, is a short-chain fatty acid deficiency state. Perfusion of the disconnected segment of colon with short-chain fatty acids reversed the condition both clinically and histologically. Noting the close similarity between diversion colitis and ulcerative colitis, Roediger[11] investigated the metabolism of short-chain fatty acids and noted that, while he was unable to detect short-chain fatty acid deficiency, there appeared to be a partial block of its metabolism. Hypothesising that the metabolic block could be bypassed if substrate concentrations were increased, Sheppach and colleagues[12] performed a controlled study in which patients with distal colitis were given rectal infusions of either placebo or butyrate for a 2-week cross-over trial. The study supported the hypothesis, with significant improvement in clinical symptoms and histological changes after butyrate but not after placebo. Furthermore, they measured the effect of treatment on colonic crypt cell differentiation using a method based on the *in vitro* incorporation of tritiated thymidine. The results demonstrated that the colitis patients had an abnormal proliferation index, associated with increased risk for malignant change. After treatment cellular proliferation returned to normal, raising the intriguing possibility that this form of nutritional therapy might reduce the long-term risk of neoplastic change — bearing in mind that patients with ulcerative colitis have an increased risk of developing colon cancer. The antineoplastic potential of butyrate has been confirmed by cell culture studies.[13]

A further important message from the study is the implication that 'bowel rest' may not only be unhelpful in the management of acute attacks of ulcerative colitis, but may even retard resolution. This is consistent with evidence that no controlled clinical trial has yet been able to show benefit from this unfortunately still much-used technique.[14,15]

So what does this mean for South African medicine? The hypothesis could explain the remarkably low incidence of colonic disorders such as ulcerative colitis, polyposis and colon cancer in black South Africans. Nutritional studies have confirmed that their usual diet has a high carbohydrate content,[16] which, by extrapolation, could lead to increased delivery of carbohydrate to the colon, increased bacterial metabolism, increased short-chain fatty acid production and consequently improved cellular nutrition and health. In further support of this contention, Segal and colleagues[17] have shown that maize meal, the chief dietary carbohydrate source in this population group, is incompletely absorbed and that faecal butyrate production is elevated.[18] Recent fascinating studies have indicated that the composition of the bacterial flora may also be an important determinant of disease. There is evidence that increased hydrogen production may be toxic to the colon.[19] Certain bacteria, such as methanogenic bacteria, are more effective in the

disposal of hydrogen, whereas others, such as sulphate-reducing bacteria, use hydrogen to produce toxic byproducts.[20] We know that methanogenic bacteria are more common in black than in white South Africans.[21] Are sulphate-reducing bacteria less common?

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Bone mass measurement and the diagnosis of osteoporosis

Osteoporosis is a disease characterised by increased bone fragility and a consequent increase in the likelihood of fracture, which usually involves the spine, hip or wrist. The disease is common (affecting one out of every three westernised postmenopausal females), costly (acute fracture care in the USA alone exceeded $10 billion in 1990) and causes considerable morbidity and mortality (12 - 20% of hip fracture victims die within 1 year and less than 50% ever regain the functional capability to lead an independent life).[1,2]

Skeletal fragility in osteoporosis results from a reduced bone mass (osteopenia) and/or qualitative, micro-architectural deterioration of bone tissue. Bone mass (bone mineral density; BMD) is however the principal determinant of bone strength, accounting for 75 - 85% of the variance in bone strength measured *in vitro*.[3] During the past three decades numerous methods have been developed to quantitate BMD. Qualitative, structural properties of bone are said to account for the remaining 15 - 25%, but cannot be readily assessed by currently available techniques and may assume greater importance under certain circumstances.

If most of the variance in bone strength is attributable to bone density, do fractures result from a low BMD? Recent studies have firmly established a gradient of increasing fracture risk corresponding to declining levels in BMD.[1-5] In fact, the exponential increase in fracture incidence with diminishing bone mass is more impressive than the relationship between serum cholesterol and the risk of coronary heart disease.[3] Numerous studies have reported that a decrease in BMD of 2 standard deviations (see T-score later) is associated with a 4 - 8-fold increase in spine and 2 - 4-fold increase in non-spine fracture probability.[3-7] Bone mass measurement is however not a diagnostic test for fracture. Rather, it measures a risk factor (i.e. reduced BMD) for future fractures, analogous to measurement of other risk factors like cholesterol for coronary heart disease or blood pressure for stroke.

Given the fact that bone mass predicts the probability of fracture, can bone mass be measured accurately and safely? The detection of a low BMD by conventional radiography is notoriously unreliable since 30 - 50% of skeletal mass must be lost before osteopenia can be detected on routine radiographs.[3,8] Moreover, 20 - 30% of patients with radiographic osteopenia or vertebral fractures have a normal BMD and may not be at increased risk of subsequent fracture — the appearance of osteopenia often results from technical faults, while apparent osteoporotic fractures may represent juvenile epiphysitis, an old traumatic fracture or even normal variations in vertebral body shape.[3] Although the diagnosis of osteoporosis should not be based on conventional radiography, spinal radiography continues to be a substantial aid in diagnosing and in following the course of the disease. The semiquantitative evaluation of vertebral deformities proposed by Genant *et al.*[8]: reduction of vertebral height by 20 - 25% — mild; 25 - 40% — moderate; and > 40% — severe, is particularly useful in this regard.

Dual photon absorptiometry (DPA), quantitative computed tomography (QCT) and, since 1987, dual energy X-ray absorptiometry (DEXA) are established techniques capable of quantitating bone mass accurately and precisely. Recently lateral DEXA and morphometric X-ray absorptiometry (MEXA) have been introduced.[8] QCT allows separate measurement of integrated and trabecular bone (which has a turnover rate approximately 8 times as high as that of cortical bone) and therefore detects bone loss earlier. Precision (3 - 6%) and radiation dose (50 - 100 μSv) are higher, which makes this method less ideal for patient follow-up. DEXA has a high precision (1%) and a low radiation dose (1 μSv) and is also capable of measuring femoral BMD.[9] Ultrasound densitometry of the calcaneus

measures both bone density and structure (elasticity). Excellent precision (1 - 2%) and a strong correlation with spine BMD (r = 0,83 - 0,95) have been reported.[10]

There is now compelling evidence that a number of pharmacological agents prevent bone loss and reduce fracture rate by 50% or more.[1-3] One of the major problems in the management of patients with osteoporosis involves the early detection of asymptomatic cases. Assessment of historical risk factors for the development of osteoporosis is an essential part of any patient work-up. Known risk factors do not, however, account for more than 50% of the variability in bone mass and lack the necessary sensitivity and precision to screen potential patients adequately.[3] Biochemical parameters of bone turnover have also been advocated, but direct bone mass measurement is currently the only reliable method to assess fracture risk.

Many potential indications for bone mass measurement have been proposed. These range from unselected screening, to what I regard as the now outdated indications recommended by the Scientific Advisory Board of the American National Osteoporosis Foundation, published in 1989.[3] Clearly, universal (mass) screening is unlikely to be cost-effective in this country. More realistic indications could include: (*i*) patients with disorders known to affect bone adversely, e.g. Cushing's syndrome, hyperparathyroidism, chronic steroid, thyroid and anticonvulsant therapy, hypogonadism and chronic immobilisation; (*ii*) assessment of perimenopausal women for possible initiation of oestrogen replacement therapy; (*iii*) confirmation of osteopenia suspected from standard radiographs or historic risk factors; and (*iv*) initial assessment of severity and site(s) of bone loss. If BMD suggests low fracture risk, conservative lifestyle adaptations and follow-up may be all that is required. More severe bone loss argues for pharmacological intervention with anti-resorbing agents (e.g. oestrogen, bisphosphonates, calcitonin), while marked osteopenia may suggest use of bone formation stimulating drugs (e.g. enteric-coated fluoride, anabolic steroids). Bone loss is not always generalised — while certain agents are known to improve vertebral bone mass, other drugs need to be considered if the cortical bone of the hip is predominantly affected.[1,2]

Monitoring (e.g. every 12-18 months) of bone mass during treatment for osteoporosis is necessary since individual sensitivity to drugs employed in the management of osteoporosis is well established, with 10 - 30% of patients not responding to conventional doses of, for example oestrogen or fluoride.

Skeletal fracture is primarily determined by absolute bone density, regardless of age. The use of the so called T-score (expressing the patient's BMD as the deviation from the mean of the peak BMD of young normal adults) has therefore become the customary method to interpret BMD values. A reduction in the T-score of 2 standard deviations (SD) is a commonly used diagnostic criterion for significant osteopenia.[3-7] While osteopenia is most commonly the result of osteoporosis, it may also occur secondary to primary hyperparathyroidism, osteomalacia or combinations of these so-called metabolic bone diseases. Use of the generic term osteopenia avoids false assumptions regarding aetiology and implies that the aetiological investigation has only just begun. A limited biochemical evaluation and conventional skeletal radiology should therefore always accompany densitometry, which could then be interpreted as follows: (*i*) T-score within 1SD of the norm = normal; (*ii*) T-score 1- 2,5 SD below the norm = low BMD; (*iii*) T-score decreased by > 2,5 SD, without abnormal biochemistry or radiological evidence of fracture = osteoporosis; (*iv*) similar to (*iii*), but fractures present = severe osteoporosis. More detailed tests, including quantitative bone histology, may be required in problem cases.

Significant differences in the BMD of apparently comparable population groups have been reported, findings which argue strongly for the establishment of our own normative data for local populations. We have found that healthy white subjects have BMD values comparable to those of American controls. In this issue of the *SAMJ*, Kalla and co-workers (p. 398) report significant differences and also challenge current dogma that lumbar BMD decreases earlier than femoral BMD. The authors are to be commended and it is hoped that further studies, especially those involving different ethnic groups and males, will follow.

The views expressed above are largely my own. Surely the time has now come for wider deliberation, collation of opinions and data, and clear directives on the indications for densitometry, the appropriate techniques and necessary quality controls to measure bone mass accurately and reproducibly, correct interpretation of data and realistic price structures for such measurements. The newly established National Osteoporosis Foundation provides, to my mind, the appropriate forum to realise these aspirations and colleagues are urged to contact the Foundation at PO Box 481, Bellville, 7535.

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OPINION

Medical schemes' responses to the amended Medical Schemes Act and the ANC Health Policy Document

It is a fact that the medical schemes industry is under pressure. This was described in a recent article by Fourie and Marx[1] in which they analysed membership demographics, financial health and sustainability of schemes according to 1990 figures.[1] The picture for the period 1991 - 1993 is no brighter, and notice must be taken of the Fourie and Marx conclusion that survival of schemes is dependent on cost containment, advance provision for pensioner benefits and actuarial valuation.[1] In considering some of the causes of the crisis, quite apart from the effects of those cost-drivers which exist in a section of the South African population which is clamouring for the best possible care in facilities equipped with the latest technology, medical schemes are also faced with the problem of a growing ageing population: in terms of membership of schemes, the ratio of active to continuing and widowed members has declined from 15,3:1 to 7,0:1 over the past 6 years.[1]

Price and Masobe, in their paper on the future of medical schemes,[2] pick up on the financial burden of the ageing population, but discuss it in the context of the amendments to the Medical Schemes Act.[3] Their view is that far from improving the situation, the deregulation of the medical schemes industry will cause another extremely serious problem as employers and medical schemes are forced to abandon higher-risk members or squeeze them out of the system, depositing them on the doorstep of the State.

Added to the above threats to the medical schemes industry are the economic downturn and the entrance into medical schemes of lower-income earners and their families, bringing with them the health problems which beset the socially disadvantaged.

Important effects of all these stressors have included a decline in medical scheme membership (D.Kolver, Registrar of Medical Schemes — personal communication) and a move by the insurance industry to design and market products for the low-risk and relatively healthy young population.

In contrast to the opinion expressed by Price and Masobe,[2] the view within the medical schemes industry is that the amended Act has positive and negative aspects.

Positive features of the amended Act

Under the old Act, employers and scheme members would increasingly have moved away from medical schemes in response to rampant premiums, and would have sought more limited health care cover elsewhere. The new Act allows schemes greater flexibility in the design of the packages, in line with the preferences of existing and potential members. For example, this will enable schemes to introduce an essential health care package as an affordable product which will appeal to those at low risk who do not want catastrophic cover for themselves or their families. Such a move not only diminishes the burden of cost for employers and existing members, but also casts the health care net wider by making it more accessible to lower-income groups. At the the other end of the spectrum, packages will be available for those in the higher-income brackets who, notwithstanding youth and health, seek the 'luxury' of catastrophic cover and forward funding.

These 'designer policies' will typically be introduced in an evolutionary rather than a revolutionary manner. A policy of revolution, in which schemes abandon those at risk, would result in medical, social, political and financial distress, if not disaster. At the end of the evolutionary process we will be left with a private health care funding system which superimposes on an essential health care package mixed combinations of cross-subsidy medical plans, long-term prefunding plans, and personalised savings plans. The ultimate objective is to recreate the risk pool in an adequate but different form from that which existed in the past.

Other positive features of the Act are the ability of medical schemes to enter into contractual relationships with hospitals and professional health care providers, and the ability of schemes to metamorphose from claims processors into critical analysts of where and how the budget is being spent. Ruff[4] has written on the positive aspects of managed health care in the South African situation, while the advantages of clinical audit and quality assurance have also been well documented.[5] Managed properly, medical schemes will become effective participants in the delivery of health care, sensitive to the needs of members and providers of service alike, but functioning within the economic realities and limitations of South African society. This scenario not only addresses the current funding crisis in the medical schemes industry, but also accommodates the sociopolitical changes as the country moves towards equity in the provision of health care. Price and Masobe's[2] proposal for medical scheme funding of an essential health package is an example of how the system could not only accommodate the present, but also be adaptable to future requirements of a national health insurance system.

Negative features of the Act

In a competitive private sector funding market, as medical schemes and private insurers compete for members, both groups are likely to consider risk rating principles, particularly for the chronically ill and those members who are a significant burden on the system. These high-risk categories may, with time, be left increasingly to public sector care. However, it is likely that in future, the cost of care for the aged and chronically ill will be partially offset by the introduction of prefunded packages arranged by medical schemes. Such packages will enable individuals to set aside money while they are employed, specifically to defray health costs after retirement.

On the other hand, one might argue that this is not a negative result. Perhaps it is desirable to channel at least certain high-risk categories into the public sector, e.g. patients with renal failure requiring dialysis and/or transplantation, patients with complicated diabetes or

sufferers of various inherited disorders. The objective of care for such categories in the public sector would be management in academic environments in which clinical expertise is combined with economies of scale to provide high-quality, cost-effective health care. This approach would enable medical schemes to continue funding high-risk members while keeping premiums at a manageable level.

An alternative to medical scheme payments to the public sector on a fee-for-service basis for care provided to the high-cost categories, would be care on a capitated basis, where schemes would contract with academic centres to provide certain services to all eligible patients for a fixed fee. It may well be argued that physical or human resource constraints will limit the viability of the public sector high-care option. The response could then be to extend care to the private sector, but for such care to be under the supervision of academic specialists who would apply clinical guidelines and therapeutic protocols as in the academic centre, and utilise drugs purchased within the state tender system.

Responsibilities of employers and medical schemes

It is the belief of the medical schemes industry that the argument which claims that changes to the Act will result in large-scale shedding of chronically ill and aged patients is almost certainly overstated. Employers have in most cases assumed a moral obligation towards retired and soon-to-be retired employees. Employers will therefore seek out schemes which offer continuation benefits at reasonable prices, and will continue to support these schemes for as long as their obligation to pensioners exists and they are financially able to meet their commitments. However, employers are also likely to respond to changes in the Act by demanding that medical schemes and insurers provide funding options which set aside appropriate reserve funds and are geared to meeting future health costs.

Medical schemes are also likely to explore options in terms of health care delivery systems, and are likely to operate more along contractual lines in order to ensure that obligations are met within the constraints of limited budgets. While this will involve greater sophistication in the area of financial management, it will also require access to and analysis of high-quality computerised information. Systems linking schemes to hospitals and providers will capture data which will ultimately facilitate transparency, utilisation review, clinical audit and peer review, and which will foster quality assurance, cost containment and improved use of limited resources.

Recommended policy for enhancing the cover offered by medical schemes

Taking into account the positive and negative aspects of the amendments to the Medical Schemes Act, the needs of employees and the responsibilities of employers, the following approach will most likely be adopted by medical schemes to promote and provide appropriate basic/essential health cover for all members:

— It should be necessary for all employed people and their dependants to obtain financial cover for at least a basic (essential) package of health care. The employers' medical schemes should be required to offer full cover for these services.

— As regards the basic (essential) package, no medical scheme should deny enrolment to any applicant because of health, employment or financial status, nor should they charge some patients more than others because of age, medical condition or other factors related to risk.

— In respect of cover relating to the basic (essential) package of health care services, any competition between medical schemes should be based upon quality and service, not on selection of low-risk consumers.

— All medical scheme options should be required to offer full cover for these basic services.

— All medical schemes should be required to meet certain minimum financial reporting, auditing and reserve requirements.

— All medical schemes should be required to collect and submit relevant data in order to facilitate planning at local, provincial and national levels.

— Medical schemes should be allowed to offer coverage for services not included in the basic/essential health care package, subject to appropriate regulation relating to certain specialised equipment, technologies and facilities, which may be introduced from time to time. For example, this regulation may require medical schemes to purchase certain high-level specialised services from public sector facilities, such as academic centres. In this way, the teaching, research and clinical service functions of these facilities can be strengthened for the long-term benefit of all South Africans.

— A system of state subsidies could be introduced to ease the burden on small employers and eligible low-income employees.

— In the event of liquidation of a medical scheme, claims relating to basic/essential services should be preferent claims.

— All medical schemes could be required to participate in a risk equalisation fund to ensure that no medical scheme faces an excessive claims burden arising from the policy listed above. This fund would apply in respect of the basic/essential health care package.

The ANC National Health Plan for South Africa

On the eve of a new, equitable health dispensation, are the above comments and proposals of any value? How, if at all, can the medical schemes respond constructively to the amendments to the Medical Schemes Act, and also to an ANC vision which discourages expansion of the private sector, proposes regulatory mechanisms, and promotes the consideration of alternatives such as compulsory social insurance for all formal sector employees and their dependants. It is the belief of the medical schemes industry that there are several areas in which the private and public sectors can work together to promote health and health care.

It should be acknowledged that professional excellence, while not always in synchrony with the national health needs, is indeed present in the private sector: medical expertise, administrative structures, information systems and review processes are all in place. These must not be underestimated or ignored, and should be retained,

developed and integrated into the National Health Strategy.

Perhaps the most important point to be made is that the medical schemes and the ANC actually share an objective, i.e. the broadest possible cover by means of an essential health care package. However, whereas the schemes focus on the privately funded sector and seek to pay for the basic package from funds generated by employer and employee, the ANC is in favour of the package being available to all South Africans, funded by a national health system or insurance. As mentioned earlier, Price and Masobe[2] make a case for the retention of the short-to-medium-term medical scheme option and explain how this could be transformed over a period of time into the nationally funded option. Accepting Price and Masobe's view, and given the serious commitment of the medical schemes industry to accept responsibility for health and health care, the funds necessary for the interim cover should continue to be supported by tax concessions, at least in the short and medium term.

The employer contribution to a registered medical scheme is not taxed in the hands of the employee. Generally this contribution amounts to 50% of the total medical aid contributions. The tax saved by the employee on this employer contribution will vary from one employee to the next, and will therefore depend on the marginal rate of tax attributable to each employee. It is this tax saving which we refer to as the tax subsidy.

The employer contribution to a registered medical aid is tax deductible as a business expense incurred in the production of income. This is not regarded as a tax subsidy. This is because any attempt to deny tax deductibility will cause an employer to add his expenditure back to employee income, and call it 'salary' or 'wage'. In this way the expenditure will remain tax-deductible.

Abolition of the current tax subsidy would almost certainly have a profound effect on medical schemes as members downgrade policies or abandon schemes altogether. In general, members would not be able to maintain their status because of the additional contribution they would have to make from their salaries after loss of the subsidy and their having to pay tax on the portion of the premium previously paid by employers. Loss of membership not only threatens schemes, as described earlier in this paper, but threatens the private health care providers as well. There is also the likelihood that those who drop out of schemes would become dependent on the public sector for health care, thereby adding to the burden of an already stressed system.

In Fig. 1 we show the present situation in terms of medical schemes expenditure. Critical data are the earnings-after-tax figures, provider costs, and the government tax information. The effects of various reductions in medical schemes contributions (which obviously translate into reductions in both expenditure and membership) can be seen in respect of the critical data sets: as membership and expenditure fall, fixed costs remain constant, but taxable earnings and earnings after tax plummet. Granted, at lower levels of loss of membership and expenditure, the government tax revenue increases, but probably at the cost of collapse of some providers (medical schemes, hospitals, pharmacists and doctors). Furthermore, the tax gains are likely to be offset by the increased number of patients presenting to the public sector. Certainly providers could attempt to delay their collapse by overservicing the remaining patients;

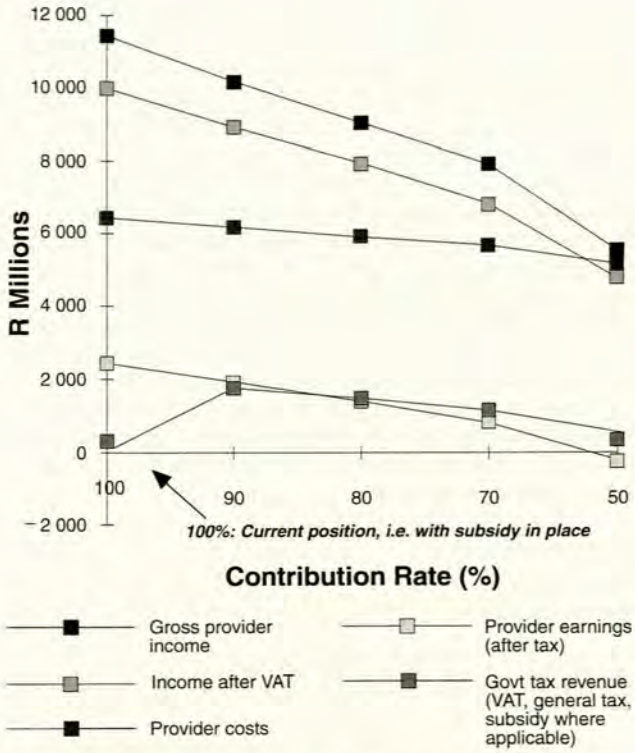

Fig. 1. Impact of removal of the tax subsidy on private health sector costs and earnings.

however, such a move is likely to accelerate the process of collapse, not retard it. As the process advances, the government tax gains start to diminish, the private sector's after-tax earnings fall even more dramatically, and an increasing number of patients and providers turn to the State for assistance.

The 1993 World Development Report[6] argues that universal government financing of an essential package leads to public subsidies to the wealthy, who can afford to pay for their own services. The Report argues that a policy of concentrating public resources on service for the poor and requiring others to pay all or part of their own costs makes sense on equity grounds (although there are disadvantages). The Report suggests that in middle-income countries, where a significant part of the population may be covered by private or social insurances, governments can target public monies to the poor by legally defining and mandating that the defined national essential health care package be covered in all private insurance policies, thereby freeing government resources to target the poor. Retention of the tax subsidy would be useful if such a policy were to be pursued.

Conclusion

In coming to terms with the amendments to the Act and the ANC policy document and both of these in relation to the needs of South Africa, we must recognise the commonality of purpose, and commit the private and public sectors to co-operation and integration at the appropriate levels. The ANC mission, which is 'to design comprehensive

programmes, reduce waste, increase efficiency and promote greater control by communities and individuals over their health and health care, respecting human rights and promoting accountability to the users of health facilities and the public at large',[5] applies equally to medical schemes and their members. Furthermore, integration of the sectors can be achieved without sacrificing the ANC's stated objectives of promoting capitation v. fee-for-service, dissociating income from volume or brand of medication prescribed, and ensuring quality care by peer review, clinical audit and the development of therapeutic guidelines. In fact, review of recent medical schemes literature will reveal that all of the above strategies have been considered if not already included in various packages and programmes. Co-operation and collaboration make eminent sense, and medical schemes are making it known that they are willing and able to take their place as participants in the national health care delivery system.

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SPECIAL ARTICLE

Fifty years of nutrition research — past work contains the key to future strategies

In this article, on the 25th anniversary of the Medical Research Council (MRC), we show how medical research in the field of nutrition conducted in this country has come full circle. From a strong foundation in community-based research in the 1940s and 1950s and pioneering work by primary health care (PHC) researchers whose work became world-renowned, to an increase in laboratory-based research in the 1960s, 1970s and part of the 1980s, there is now a return to a PHC approach in the 1990s. We trace the historical development of the MRC's nutrition research from the medical units based at the Council for Scientific and Industrial Research (CSIR) to the present focus on essential national health research (ENHR) aimed at directly confronting the health problems of the country.

CSIR reports and policy documents, early MRC Annual Reports and the publications of the period were used to gain a clear understanding of the work being done and the change in direction. We also consulted researchers active during the 1940s and 1950s (Sidney and Emily Kark, Mervyn Susser and Alex Walker). At a time of major restructuring in this country, it seems opportune to learn from the past. This article complements the Yach and Tollman[1] theme of learning from public health initiatives of the past to create a more equitable health system in a post-apartheid era. We focus on nutrition research because there is a strong sense of continuity between the work done by nutrition research groups in the 1950s and work today.

What exactly is meant by PHC or community-based research?

The PHC approach emphasises equity and social justice and forces researchers to look at the real beneficiaries of research and not to conduct research only for its own sake.

These concepts were developed in the late 1930s and early 1940s by South African pioneers such as Drs R. A. Dart, J. and T. Gillman, E. H. Cluver, H. S. Gear, G. W. Gale and Sidney and Emily Kark and colleagues, who were then re-evaluating traditional approaches to public health and reaching a very sophisticated, holistic view of health. 'Further, they built upon their causal explanations when defining appropriate health interventions, and in so doing went beyond the selective and simplistic approaches to health that have characterised global public health strategies of the 1980s.'[1] These pioneers were directly responsible for much of the early work in some of the CSIR medical units.

This pioneering spirit of public health was not confined to South Africa, and the 1940s saw the development of national health services in a number of countries. The Beveridge Plan, for example, outlined a welfare state including a national health service for post-war Britain. South Africa was active in the World Health Organisation (WHO) from its beginning in 1948, and this meant that great value was attached to applied research and community involvement.

Gear, Brock and Kark all served on early WHO commissions.

A brief history of medical research in South Africa

Research direction and application over the years has reflected the political and social priorities and goals of the dominant forces. This has led to advanced technological capacity in laboratory sciences (as evidenced by the heart transplantation programme and proton therapy) in the face of high levels of preventable mortality and morbidity and considerable inequity in health status and the distribution of resources needed for development.

In 1977 John Brock wrote, 'Medical research must, to justify the name, be consciously directed towards an end — the alleviation or cure of human illness and its ultimate prevention. It is basically a field of applied research.[2]

The South African Institute for Medical Research (SAIMR) was founded in 1914, at the same time as the founding of

the Chair of Medicine at the University of Cape Town (UCT) (1912 - 1914).

The SAIMR initially did a great deal of work on the diseases affecting mineworkers and also investigated infectious diseases. A strong tradition of research was established, but funding was poor until the post-war years, when the CSIR (which was created by an Act of Parliament in 1945) was given a brief from the government to 'explore and develop the whole field of medical research'.[3] After thorough investigation the CSIR decided that rather than operating its own research, it would provide funds to existing research bodies and researchers. An annual grant was made to the SAIMR and support was given to 20 units, groups and projects based at the medical schools and universities. This was managed by an expert committee, the Medical and Dental Research Committee, the seminal MRC.

The 1949 Annual Report of the CSIR described these medical research units as follows: 'One of the most important activities on the Council's programme has been the development of research units, housed where most appropriate, and built around individuals competent to do the work. Problems of national importance have received priority.'[4] Similar sentiments were used to describe the establishment of the MRC's National Programmes in 1992: 'Through the formation of national collaborative programmes, skills and resources will be rationalised in the quest to find solutions to the health care problems of the population.'[5]

Two of the units formed in the late 1940s, the Clinical Nutrition Research Unit and the Family Health Research Unit, initially had a strong PHC approach, and we focus on their activities.

Clinical Medicine Research Unit

The Clinical Nutrition Research Unit started its life as the Social Medicine Research Unit at UCT under the direction of Professor John Flemming Brock (1905 - 1983). Described as the clinical father of South African medical research,[6] he occupied the chair of medicine at UCT for 30 years. He saw health and disease as the result of many environmental, psychosomatic and genetic factors, but most importantly as the result of the quantity and quality of the food we eat. Work in the Unit was influenced by this philosophy for many years.

The Unit's initial research programme involved a controlled cross-section of the white and coloured populations of the Cape to establish rates of morbidity and mortality for the so-called 'social diseases' such as tuberculosis, eclampsia, infantile bronchopneumonia and gastro-enteritis, to ascertain the nutritional status of each group and to investigate other social factors such as housing and education which impact on these rates.[4]

In 1949 Brock[7] published a comprehensive outline of the pattern of health and disease encountered in the Cape Coloured population in the *SAMJ*. His study revealed that tuberculosis and pneumonia, diarrhoea and gastro-intestinal illnesses were the major causes of death, in contrast to the European population in which heart disease and cancer were much more prevalent. He pointed out that the 'social diseases' are particularly prevalent in the population at the lower end of the socio-economic scale: 'those diseases in which the most important aetiological factors are deficiency of health-promotive factors, particularly food, exercise, sleep, warmth, air and cleanliness'.[7] The article points out that the necessary remedial action must lie in an improvement in socio-economic status and, to some extent, in the hands of the people themselves.

Family Health Research Unit

By this stage Sidney Kark was well known in the field of community health care. During the 1940s and early 1950s an interesting and extremely successful PHC experiment was undertaken by the government at the Polela Health Centre in Natal. It was initially conceived by Drs E. H. Cluver and J. H. S. Gear, Chief Medical Officer and Deputy Chief Medical Officer, respectively, of the Ministry of Health. Dr Sidney Kark was appointed in 1939 to direct and initiate this pilot project. He, together with his wife, Dr Emily Kark, Edward Jali (a Fort Hare graduate medical aide) and his wife Amelia Jali (a state-registered nurse graduate of McCord Zulu Hospital, Durban) were the founding team of the Polela Health Unit. Shortly afterwards 5 malaria assistants were sent to join the team, and underwent intensive retraining to become community health field workers and later community health educators.

The Polela Health Centre was internationally advanced for its time. It aimed to provide both preventive and curative services. Interventions were based on sound epidemiological foundations and an understanding of the social context of health and disease. Progress was rapid, especially the decline in a high infant mortality rate, the improved growth and clinical nutritional status of infants and young children in the community, and the control of infectious diseases. Measurement of all activities and birth and death notifications were introduced in consultation with the community.

This work strongly influenced the recommendations of the Gluckman Commission of 1944, following a visit by commission members to the health centre in 1943. The commission (1942 - 1944) had as its stated aim 'to produce a plan for a national health service designed to promote and preserve the health of all sections of the people in accordance with modern standards.'[8] The report described the existing health service as fragmented and over-emphasising curative as opposed to preventive approaches. The Commission proposed a unified national health system with community health centres as its building blocks.[9] In fact, the establishment of community health centres was the only recommendation that reached any level of implementation.

One of the earliest decisions of the Health Centre Advisory Committee was the establishment of an institute to train personnel for the future health centre service. This was established in Durban in 1945 and was later named the Institute of Family and Community Health (IFCH), with Sidney Kark as its initiator and director. This required transfer of the Karks and some of the Polela Health Centre staff to Durban. Polela was incorporated as the rural research and training base of the IFCH and was expanded by an increase in staff and accommodation. Six practising health centres were established in Durban as a community base for field experience of trainees and for research in family and community health. Community health programmes were based on the ongoing use of

epidemiology in practice, in relation to the clinical findings and way of life of the individuals and families in the community — all the homes in a defined area were included, not just the homes of patients.

The remarkable success of the health centres was reflected in a considerable improvement in health status, including infant health and survival, reduction in clinical malnutrition and preventable infectious diseases (including sexually transmitted diseases), and the almost complete eradication of smallpox, typhoid fever, whooping cough and the nutritional manifestations of measles. There was also marked progress in the people themselves, who became active in the promotion of their own health.

In the latter part of 1948 and early 1949, Professor Sarel Oosthuizen, chairman of the medical research section of the CSIR, visited the IFCH with Dr George Gale, Chief Health Officer of the Health Ministry. After this visit the CSIR Social Medicine Research Unit was established at the IFCH in 1949. The name was later changed to the Family Health Research Unit. It included two sections: (*i*) studies in growth, development and nutritional status of South African girls with particular reference to puberty, with Dr Emily Kark as the CSIR bursar for this section; and (*ii*) studies on birth weight and subsequent development in South African babies, with Dr Eva Salber the CSIR bursar, assisted by Evelyn Bradshaw.

Studies on growth, development and nutritional status

A number of studies looked at sexual maturation through puberty in girls from different ethnic, racial and social backgrounds. The various studies showed significant differences in age at menarche between the different groups, with the mean for urban Indian girls over 6 months earlier than that for their black counterparts.[10-12]

Emily Kark's study[13] on the growth and nutritional status of black girls in Durban was published by the *South African Journal of Medical Science* in 1953. The study involved a complete clinical examination of a group of urban black girls in Lamontville followed by a feeding experiment which studied the influence of a daily milk or syrup supplement on growth and nutritional status. There was a consistent and significant improvement in the clinical status over the course of the year, showing that nutritional supplementation undoubtedly leads to improvements in growth and health in children.

Birth weights of South African babies

The classic series of studies on birth weight and subsequent development were conducted by Eva Salber and Evelyn Bradshaw, and various articles appeared in the *SAMJ*,[14] the *British Journal of Preventive Social Medicine*[15-18] and *Human Biology*,[19] among others. The findings were very much in line with similar studies today. 'It is suggested that the birth weights of European and non-European babies may be strongly affected by both economic and cultural factors. The differing economic levels and nutritional states in the four racial groups largely determine the differences in mean birth weight, incidence of prematurity and seasonal variations in birth weight found. Cultural factors such as age at childbirth, number of children born, and the use of contraception again make for differences in the populations observed.'[14]

In a study of babies at Polela conducted by Sidney Kark it was found that although during the first 3 months of life the Polela babies' weight gain was equal to that of British and American white and black middle-class babies, after the age of 3 months there was a decided lag in this growth compared to the other groups.[20] This was corrected by a special community health programme which focused on the early signs of infant malnutrition. A similar change was effected in the weight growth of Indians in the Merebank community of Durban, but in this community the improvement was even more evident in girls than in boys, especially in the second half of the first year of life.

New name, new directions?

In 1951 the Cape Town group opted for a new name, which confirmed its status as a completely separate research initiative and to some extent laid the basis for the change in focus that was to occur. The Cape Town group regarded the term 'social medicine' as too vague and 'ill defined' (unpublished CSIR reports, MRC file 6/13) and changed its name to the Clinical Nutrition Research Unit. The Annual Report emphasises that 'the change in name should not involve a change in the "social" approach to the problem under investigation'.[21]

Support terminated

The death blow to the Durban group's work came with the government's decision to withdraw from funding the Institute in 1955. It was temporarily saved by an action by the Principal of the University of Natal, Dr E. G. Malherbe, and Dr George Gale, then Dean of the Faculty of Medicine, who were successful in obtaining a 5-year grant from the Rockefeller Foundation. This grant was to finance the Department of Social, Preventive and Family Medicine at the University of Natal, which was fully integrated with the IFCH. At that time it was the only university department in the country which offered a 3-year clerkship based on family practice. After the government's decision to stop financing the IFCH the CSIR Unit was also closed, on 31 March 1956.

The Karks emigrated to the USA in 1958 knowing that after the termination of the Rockefeller grant the government would not support the IFCH or the university department integrated with it. Kark had faced increasing official opposition to his work and had even been investigated for communist activities in the 1940s after distributing dried skimmed milk to malnourished children.[22] According to Kark (personal communication, 1993), the multiracial health teams of men and women, the less formal setting at the Institute and the respect given to patients no matter what their race or background offended many.

The period of 'grand apartheid' initiated with the rise to power of the National Party in 1948 led to a retreat from world public health fora and an increased emphasis on high-tech research and curative interventions. The public health research emphasis on equity challenged the apartheid policy and led to a flight of public health expertise. Table I lists a few South Africans who emigrated between 1948 and 1960 and later attained high office in public health internationally.

Table I. Ten South African public health researchers who emigrated between 1948 and 1960

Sidney Kark	Spent time in Chapel Hill, North Carolina, then moved to Jerusalem.
Emily Kark	Developed the concept of PHC for the WHO. Now both retired.
Mervyn Susser Zena Stein	Both went to Columbia University, New York, where they played key roles in public health in the USA. Both are now emeritus but are actively involved as advisers to the MRC — particularly to the Centre for Epidemiological Research in Southern Africa (CERSA) and the AIDS Programme. Mervyn Susser is also Editor of the *American Journal of Public Health*.
Eva Salber	Went to Chapel Hill, North Carolina, where she was a pioneer in the field of paediatric public health.
Henry Phillips	Played a key role in policy development in public health. Now retired.
Harding le Riche	Became Deputy Minister of Health, Canada. Now retired.
George Gale	Became Professor of Preventive Medicine at Makere University in Uganda and then WHO Visiting Professor of Public Health in Bangkok, Thailand, and at the University of Kuala Lumpur in Malaysia. He finally retired to London,where he died in 1976.
John Cassel	Regarded as playing a legendary role at Chapel Hill in the field of social epidemiology. Delivers a prestigious annual lecture at the American Epidemiology Meeting.
Sidney Shapiro	Professor of Epidemiology at Boston University. Now collaborates with the CERSA and has regularly visited South Africa since 1990.

Studies on kwashiorkor

The Clinical Nutrition Research Unit in Cape Town continued to produce high-quality research. Brock' s work in the field of kwashiorkor had been recognised internationally when he was appointed by the WHO Joint Expert Committee on Nutrition to undertake a further study. This work led to tremendous international interest in the effects of poor quantity and quality of protein and vitamin deficiency, and fostered collaboration with other African countries. Appropriate research in South Africa was thus receiving international recognition and funding which could be used to undertake more research.

In a paper published in *The Leech* in 1958,[23] the researchers stated that on the African continent the widespread protein malnutrition which produces kwashiorkor must also be one of the reasons for the high prevalences of adult cirrhosis and of primary carcinoma, but that the relationship is not necessarily direct or sequential. Improved diets recommended for the treatment of kwashiorkor would undoubtedly lead to the correction of protein malnutrition at all ages. An interesting problem still encountered today was also highlighted: 'It is a sobering thought too, that the sophistication of diet which is taking place among privileged people is probably leading to the incorporation of more and more carcinogenic substances in processed foodstuffs. In other words, if by better dieting we can prevent cancer of the liver in underprivileged people, are we merely going to substitute another form of cancer resulting from sophisticated and highly processed foodstuffs?' The association of high-fat diets with cancers of the colon, breast and prostate, and the possible protective effects of high intakes of fibre and vitamins C and E for certain cancers, suggest that this may be true. However, food additives have not been shown to contribute significantly to increased risk of disease.[24]

Dietary fat and coronary disease

Studies on dietary excess and deficiency were simultaneously undertaken by the Unit, with a change in the balance occurring over the years favouring research into the nutritional impact of excess in white populations. There was increasing emphasis internationally on research on ischaemic heart disease (IHD), particularly in the USA, and this undoubtedly influenced the direction of local research.

The unit therefore embarked on a project to investigate serum cholesterol and dietary fat, with particular reference to coronary thrombosis. This was a long-term study investigating the effect of saturated and unsaturated fats on serum cholesterol levels. 'The nutritional and metabolic work in this field is being done against a background of the enormous prevalence of ischaemic (coronary) heart disease in white South Africans who are second in world statistics only to the USA in mortality from this disease.'[25] The report for that year also stresses that 'dietary factors have to be taken in relation to admitted causative factors such as lack of exercise, tension and strain and smoking'[25] (smoking is now — over 30 years later — the subject of intense international and local study). It points out that other factors such as race, family and sex are outside public health control but that the low prevalence of IHD in the black population suggests that mortality among whites could be reduced if the operative causes could be identified and corrected. A number of publications on the effect of dietary fats on IHD and coronary heart disease were written by Gordon (a bursary holder in the Unit), Bronte-Stewart and Brock, and were published in the *British Medical Bulletin,*[26] the *Central African Journal of Medicine,*[27] The *Lancet,*[28] *The Practitioner*[29] and the *SAMJ.*[30] Failure to implement these research findings in the public health arena meant that as IHD rates in the white population declined, rates in the coloured and black populations increased.

As the 1960s progressed, the swing towards more experimental, laboratory-based work in the Unit became much more obvious. Writing in the *SAMJ* in 1958, Brock[31] outlined the history of nutrition research in the world and in South Africa in particular and stated: 'It suddenly appears that those of us who felt that nutrition was a field for scientific enquiry in its own right, and for its possible significance in relation to human health and disease, were not deceiving ourselves. Research into the nutritional aspects of disease has suddenly become exciting and intellectually rewarding.'

CSIR to MRC

The CSIR established a National Nutrition Research Institute in 1954, which worked in the fields of nutrition and food research. It was to some extent an amalgamation of a number of smaller nutrition research groups — particularly one under Dr A. R. P. Walker at the SAIMR and another under Dr J. Gillman at the University of the Witwatersrand, which had undertaken interesting work in the preparation of a medical geography of nutritional diseases in the country, the establishment of the complete natural history of malnourished subjects from birth to death, the effect of malnutrition on the evolution of diseases, nutritional techniques and bio-assays of foods.

Commission of Inquiry into Medical Research

In 1954 a proposal was made by the Union Health Department that the CSIR should take over all medical research being conducted within the Department. It was recommended that a commission of inquiry be appointed. The commission was to investigate and report on: (*i*) the possibility of better co-ordination of medical research in the Union, possibly under one body; (*ii*) the possibility of bringing about such co-ordination under, or as part of, an existing statutory body, and (*iii*) the necessity or otherwise for the establishment of a new independent body to co-ordinate medical research. The brief went on to include such matters as to whom an independent body would report and the constitution, powers, duties and financing of such a body.[32] The first glimmerings of the MRC of today appeared.

By the 1960s it had become very clear that a separate body was needed for the control and support of medical research. A report by the CSIR's Advisory Committee for Research and Co-ordination, 'Current status of research in the medical sciences' (unpublished, MRC file M6/1/2/1b vol. 1), compiled in 1967 - 68, mentioned the strong possibility of the establishment of an independent statutory body, pointed out some of the observed changes in medical research, and made recommendations for the future. Interestingly, it states: 'In broad terms it is preferable that research has a goal and that this should be linked to the problems of the country. On the other hand, research of any nature constitutes a growth medium for the development of scientists, it creates an environment in which there is a conscious desire to find answers to the unknown, and it serves to attract and keep personnel for training centres. The value of clinical research also tends to be underestimated. There is increasing emphasis on the laboratory and the more basic aspects of medicine.' (Translated from Afrikaans.)

The MRC was founded in 1969 and took over some of the medical units, groups and short-term workers supported by the CSIR as well as sections of the National Nutrition Research Institute. The National Institute for Nutritional Diseases was founded and initially functioned under the leadership of the Vice-President of the MRC, Dr J. J. Theron. In the first year, Dr I. F. H. Purchase was appointed as Director. The Institute was divided into the following divisions: Medical Statistics and Epidemiology, Physiological Chemistry, Toxicology, Medical Biochemistry, and child and adult clinics. The most important research projects in the first few years were studies on kwashiorkor, Mseleni hip disease and an investigation of the causes of liver cancer focusing on the mycotoxins (laying the basis for recent work which has gained international acclaim).

The first MRC Annual Report of 1969 - 70 outlines the goals and activities of the institutes, units and groups and, interestingly, describes the function of the Clinical Nutrition Research Unit as 'research into the relationships between food, health and disease at *clinical* and *laboratory* level.'[33] The main projects described concerned protein catabolism in the study of kwashiorkor using an animal model, the roles of saturated and unsaturated fats in levels of serum total cholesterol, and the mechanics and pathogenesis of atherosclerosis.

Twenty-eight research projects were terminated at the end of 1972,[34] and with the loss of overseas funding and the impending retirement of Brock, the Clinical Nutrition Research Unit was finally closed. The National Research Institute for Nutritional Diseases then became the major focus of nutritional research in the MRC.

Framework autonomy

The system of 'framework autonomy' introduced by the government in 1987 profoundly influenced the functioning of all the statutory research bodies. 'In terms of the policy the 5 statutory councils (the MRC, CSIR, Human Sciences Research Council, Mintek and the South African Bureau of Standards) will have greater freedom in managing their own affairs. However, they will also be dependent on contract research and services, rather than direct state funding, for a larger proportion of their funds.'[35] Research was required to be more marketable and also to have potential for application without ignoring the important role of fundamental research.

All of the statutory bodies have received criticism over the years for not conducting research with specific goals emerging from sufficient discussion with the disadvantaged communities whose needs are to be met.[36] Current development of a future science and technology policy indicates that this criticism is being actively addressed.

The MRC Board

The composition of the MRC Board has been a barometer of both changes within the organisation and the wider socio-economic and political changes. The early Council members (and institute directors) were white and male. Further, most were based in the university medical schools. Even today the universities have not developed sufficient expertise in public and community health. 'The universities, particularly medical schools, have fallen far short in providing the institutional backing and intellectual leadership so needed to pioneer future directions in primary health care and community-based health services.'[1] The group determining research direction in the MRC was therefore far from representative of the population. The demise of international links (South Africa was suspended from the WHO in 1974 and was not included in the Alma Ata declaration in 1978) had also inevitably led to a more inward-thinking perspective and the preponderance of laboratory-based work. 'The research conducted by the MRC's own staff, or funded by it in the universities, traditionally focused on biomedical

research responding to the research needs of individual researchers who were judged on their track records as researchers rather than on the basis of any assessment of the health needs of the population as a whole.'[36]

The changes made clearly show a start in the quest for more equitable racial and gender representation. Also notable in the current MRC Board is the inclusion of community health specialists and social scientists, reflecting the awareness of the need for health services research.

Essential national health research — a return to the past?

The extensive restructuring of the MRC undertaken from 1990 reflects the political and social changes in the country. There was a growing awareness that every country should have the ability to define its major health problems and their causes, and to recommend interventions to improve health. The Department of National Health and Population Development (DNHPD) embraced a PHC approach in 1990, and this has forced researchers to look at the real beneficiaries of research.

It became increasingly clear that owing to funding restrictions, all research, whether laboratory-based or community-based, has to be mobilised to the overriding goal of improving health. Research for the sake of research is no longer justified in a country with many pressing health problems. The global strategy of ENHR was therefore adopted. ENHR is an integrated strategy for organising and managing research. Its goal is to promote health and development on the basis of equity and social justice. It is specifically orientated toward the most important problems affecting the population, with particular emphasis on the poor, the disadvantaged and other vulnerable groups whose health needs are often overlooked. The DNHPD, the African National Congress and the Medical Association of South Africa have all endorsed ENHR. National programmes reflecting the disease priorities of the country were established by the MRC. The aim was to create a balanced research portfolio which included basic research at a molecular level and clinical work right up to community-based, highly applied policy-relevant research.[5]

The overriding goal of ENHR is encapsulated in the slogan 'Health for All,' coined at Alma Ata in 1978. Attaining this requires political commitment, public participation, realistic regional and national goal-setting, upgrading the skills of health professionals, redefining the role of the government in the health sector and taking full advantage of technological opportunities. The essence is a dynamic partnership between policy-makers and service providers, researchers and community members.[37]

National programmes created by the MRC 'for the first time consist of public health specialists, social scientists and other related researchers participating, with their biomedical colleagues, in programmes aimed at addressing the public health needs of communities.[36]

The challenge of the future will be to adopt the essential elements of ENHR fully, which include: promotion and advocacy, priority setting, capacity building and strengthening, networking, financing and managing and evaluating.[38] There is a crucial need to work with the other statutory councils, the DNHPD and non-governmental organisations. The MRC cannot encompass the whole health arena, but should strive towards building strength in certain areas and building capacity for excellence. To do that it has to build on the lessons of the past and incorporate them into a new, wider perspective for the future.

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