3
CHAPTER

Appraisal of ICMR based on Terms of Reference (TOR)

TOR Nos.: 1, 3, 4, 10

1. *To appraise the performance of the ICMR's intramural and extramural research programmes in light of the vision/ mission/ mandate, resources (human resource, infrastructure, and financial) and review mechanisms to review whether ICMR as an Institution is relevant and performing optimally in relation to its core functions.*

3. *To assess how far successful has the ICMR (and its Institutes) been in addressing the changing health contexts in India.*

4. *To examine how ICMR research has contributed to:*
   a. *Knowledge generation and closing the 'knowledge-do' gap.*
   b. *Development Impact of evidence based ICMR knowledge on policy formulations and implementations.*
   c. *Innovation and intellectual property.*
   d. *Information and knowledge management.*
   e. *Improving communication – branding and image.*
   f. *Fostering partnerships and increasing external funding*

10. *To review how ICMR measures its progress and benchmarks itself.*

The PAB was privileged to have an overview of the scientific activities of ICMR over the last five years from the DG, followed by presentations by the Directors and Chiefs of Divisions. The wealth of information on ICMR's scientific contributions is difficult to present *in toto* and the following summary only lists some highlights and critical issues.

Strategy

Two broad lines of research endeavour have been successfully pursued by the ICMR:

(a) application of available knowledge, under the prevailing socio-economic and cultural environment, through Health Systems Research involving interdisciplinary efforts between biomedical, social and behavioural sciences with epidemiology acting as a bridge;

(b) application of the powerful tools of modern biology to identify etiology, basic mechanisms of disease, risk factors, and development of diagnostics and new therapeutic agents including vaccines.

The Council has adopted a twin track approach to meet its objectives; intramural (through Institutes totally funded by ICMR) and extramural research (through grants-in-aid given to projects in non-ICMR institutions).

The permanent Institutes are mission-oriented laboratories located in different parts of India. They address research on specific health topics of relevance to the country, such as tuberculosis, leprosy, cholera and diarrhoeal diseases, viral diseases, AIDS, malaria, kala-azar, vector control, nutrition, food and drug toxicology, reproductive health, immunohaematology, oncology, epidemiology, bio-statistics, occupational health etc. The Regional Medical Research Centres focus especially on regional health problems, and also aim to strengthen and generate research capabilities in different geographic and less well served areas of the country.

Extramural research is promoted by ICMR basically to strengthen the biomedical expertise outside the Council, especially in Medical Colleges and the University system. This is a very important contribution that the Council is making in developing and fostering a culture of research in academia. This is achieved through

(a) Setting up Centres for Advanced Research in chosen research areas around existing expertise and infrastructure in selected

departments of Medical Colleges, Universities and other non-ICMR institutions;

(b) Task Force studies which emphasize a time-bound, goal-oriented approach with clearly defined targets, specific time frames, standardized and uniform methodologies, and often a multi-centric structure;

(c) Open-ended research on the basis of applications for grants-in-aid received from scientists in non-ICMR institutions located in various parts of the country.

The research priorities of the Council are in line with the national health policy and priorities. It works very closely with the national programmes which have well defined targets for control, elimination and eradication. The Council is actively engaged in various aspects of research for control of communicable diseases (HIV / AIDS, tuberculosis, malaria and others); non-communicable diseases (CVS, neurological disorders, metabolic diseases, cancers, injuries etc.); poor maternal and child health including nutritional disorders; visceral leishmaniasis, lymphatic filariasis, leprosy (targeted for elimination); and yaws and poliomyelitis (targeted for eradication).

Research priorities in the context of social obligations

The Council is aware of its social obligations and its research is guided by societal health needs, as it is funded by the Indian tax payer. The majority of the research activities of the Council are directed towards diseases that have significant links with poverty such as tuberculosis, leprosy, malaria, filariasis, visceral leishmaniasis, diarrhoeal diseases etc. It has a special focus on health of the marginalized and underprivileged sections of society. It is responsive to issues of equity, gender, ethnicity, race and caste. Regional Medical Research Centres have been established in the underserved and underdeveloped areas especially to investigate and find solutions to the health problems of the local populations. Funds are ear-marked for studies in the North-East areas of the country (10% of total budget) and for extramural projects to study the health condition and diseases which are prevalent amongst specific communities, such as the tribal populations.

Global Health priorities

ICMR's research priorities are also synchronous with global health research goals. The current portfolio of ICMR research addresses directly or indirectly the following Millennium Development Goals:

- Goal 1 - Eradicate extreme poverty and hunger
- Goal 4 - Reduce child mortality
- Goal 5 - Improve maternal health
- Goal 6 - Combat HIV / AIDS, malaria, tuberculosis and other communicable diseases
- Goal 8 - Develop global partnership for development

ICMR's response to a changing health context

- The ICMR has responded to the changing health needs of the country by developing infrastructure (new Institutes like the ones on AIDS Research, Epidemiology; new facilities and equipment; animal houses, primate research and breeding facilities; communication and IT facilities; repositories - malaria, HIV, other viruses etc.), changing the mandate of existing Institutes (e.g. Central JALMA Research Institute for Leprosy to also study other mycobacterial diseases), organizing new training programmes (e.g. bio-ethics, IPR, bio-informatics, GIS, disease burden estimation, field epidemiology) and developing rapid response mechanisms.
- ICMR has provided critical research support whenever the health needs of the country demanded rapid responses e.g. SARS, HIV, influenza, and other new and emerging and remerging infections like dengue, and co-morbidities (HIV-TB) and the emerging epidemic of life-style diseases.
- Built capacities to meet newer challenges in health research and health care industry secondary to globalization. These have included establishment of cells to handle emerging health care industry issues such as TRIPS compliance, rapid responsiveness to the changing IPR environment and encouraging liberalization of regulatory and patent mechanisms.

- Played an important role in defining the rules that govern international collaborative research. The Council is one of the few research organizations in the world which has canonized its principles for the conduct of ethical bio-medical research.
- Supported traditional and other systems of medicine and successfully brought to the front the value of these systems and their validation using tools of modern medical research methods required for clinical trials in traditional medicine.

ICMR's Research findings that have influenced Public Health

Globally

1. Development of Pulse Polio Control strategy.
2. Establishing Domiciliary and Short Course Chemotherapy for tuberculosis.
3. Making the Multi Drug Therapy for leprosy more effective.

In India

Research conducted by ICMR has helped several disease control programmes. Some of which are:

- short course chemotherapy for TB, supervised chemotherapy - now called DOTS for TB.
- multi-drug therapy for leprosy.
- mass drug administration and morbidity management for filariasis.
- operationalization of oral re-hydration therapy (ORT) for diarrhoeal diseases.
- outbreak investigations.
- surveillance at the molecular level of new and emerging infections.

- development of strategies for delivery of services (DOTS, Integrated disease vector control, rheumatic fever/rheumatic heart disease).
- development of strategies for eradication of poliomyelitis, and elimination of leishmaniasis and filariasis.
- recommended dietary allowances for Indians, nutritional value of Indian foods.
- Vitamin A prophylaxis for children to prevent nutritional blindness; iron and folic acid supplementation for pregnant women.
- provision of technical support on food testing and safety issues to regulatory authorities in India.
- clinical trials for introduction of contraceptives into the National Family Welfare Programme.
- development of nationally appropriate guidelines (for tubal sterilization, assisted reproduction).
- defining the problems of blindness, hearing impairment, cancer and mental illness and haemoglobinopathies.
- providing the basis for formulation of new programs for non-communicable diseases (cancer, blindness, deafness, mental health).

Policies and Guidelines

The ICMR drafted the country's first National Health Research Policy. By enunciating the Intellectual Property Rights Policy the Council hopes to provide appropriate technological, professional and legal expertise and services to file patents in India and abroad. In addition to the Ethical Guidelines for Biomedical Research on Human Subjects, the Council has formulated National Guidelines for Stem Cell Research and Therapy, Guidelines for Genetically Modified Foods, Guidelines for Biomedical and Behavioural Research in HIV/AIDS, and Guidelines for management of Type-II diabetes etc. National Guidelines for Accreditation, Supervision and Regulation of Assisted Reproductive Techniques Clinics in India are helping to promote measures for setting

up of an independent body through legislation for accreditation, regulation and supervision of infertility clinics in India. Guidelines and regulations for international collaborative research including transfer of biological material also have been formulated.

Knowledge management

Publications

In a time of huge growth in the volume and complexity of scientific information, the Council was quick to realize that knowledge management is a highly valued commodity. The generation, dissemination and use of knowledge form the basis of remedies for all diseases. The monthly Indian Journal of Medical Research (IJMR) is its torch bearer and ICMR Bulletin its house-journal. The IJMR has a new face and an improved get-up. Special issues on topics of high relevance to India have been published including Streptococcus and Streptococcal Research, Tuberculosis Research, and HIV/AIDS. The journal is available in full text, free on-line as an open access publication. Several other publications in the form of reports/monographs and documents (like Reviews on Indian Medicinal Plants, Cancer Atlas etc.) are regularly released that provide comprehensive topical information. By setting up a Bio-informatics Centre at its Headquarters to provide access to published and unpublished information and data-bases the Council is trying to ensure equity of access to knowledge.

Intellectual Property

To encourage the generation of new Intellectual Property and participate in the development of products and processes useful to national health programmes, the Council formulated and adopted an Intellectual Property Rights Policy in 2002. The Council has taken steps to sensitize its scientists on issues of WTO, IPR *etc.* Scientists are being made aware of the need to identify new inventions that have potential commercial values and how they could be protected through the various IP protection systems before publication. A series of steps to help the scientists with this process such as the New Invention Report System, Material Transfer Agreement, Confidentiality Agreement etc. were drafted and widely circulated in the Council.

Branding and Image building

The ICMR and its research institutions are recognized as centres of excellence that address major health issues and conduct medical research relevant to the needs of the country. The Council has a special status as a preferred partner for biomedical research in this country. In addition, the Council enjoys special relationships with international research and funding agencies as the most favoured partner in India. This has led to the development of sustained linkages with national and international research organizations. The ICMR and its Institutions have been engaged in documentation of research findings not only in peer reviewed journals but also in the form of monographs and other documents (eg. Quality Standards of Indian Medicinal Plants and Health Effects of Toxic Gas Leak at Bhopal). These documents are the authentic source of information as well as national/international guidelines. The quality and inclusion of several aspects of research and human resource development has led to the recognition of several of the ICMR Institutes as Centres of Excellence, nationally and internationally (EVRC-WHO; TRC–NIH). Several of the ICMR institutions are WHO Collaborating Centres for Research and Training on different diseases and their control.

ICMR and its scientists provide expert advice to national and global organizations (WHO, WHO/TDR, WHO–SEARO, NVBDCP, NACO etc.). The ICMR has been engaged in communicating research findings to the media and public through exhibitions conducted in the Institutions and taking part in National exhibitions organized by other bodies (National Science Congress, Swadeshi Vigyan Mela, Vigyan Rail etc.).

Scientists at the ICMR have won some of the most prestigious awards in biomedical sciences. During recent years 24 coveted awards were bagged by ICMR scientists which include Dr.Yellapragada Subba Row Memorial Lecture Award, B.C.Guha Memorial Lecture Award, Glaxo Oration Award, Shanti Swarup Bhatnagar Prize of CSIR, Dr.B.C.Roy National Award.

Public Private Partnership (PPP)

Public Private Partnership is comparatively a new field in which the ICMR has become active. PPP has emerged as a major facilitating mechanism to bridge the gap to access and equity in health. Some of the examples of recent initiatives taken in this direction are:

- TDR-Asta Medical, Germany: for evaluation of Miltefosine (an oral kala-azar drug)
- IAVI-Therion, USA: for development of HIV vaccine
- WHO-Smithkline Beecham: for use of albendazole co-administration with DEC as elimination tool for filariasis
- DNDi: ICMR is one of the founding partners for the PPP initiative for development of drugs for neglected diseases
- TRC-ACT, Chennai: for involvement of private practitioners for treatment of tuberculosis

With the lessons learnt and with experience gained it is proposed to expand this approach further and build new partnerships with the burgeoning private sector in India, as well as externally.

Linkages with manufacturing industry

The Council encourages the commercial exploitation of its research products through licensing as well as promotion of knowledge/ technology transfer. Its Institutes have transferred technologies for commercialization to Indian industry through transferring agencies such as the National Research Development Corporation and Biotechnology Consortium India Limited. Some recent examples of are:

- Cyclosporin, an immunosuppressive drug, has been transferred to a Lucknow based company, Nixil Pharmaceuticals Ltd. US, European and Indian Patents have been granted on this invention.
- Thrombinase is a thrombolytic enzyme potentially useful for the treatment of stroke, myocardial infarction, deep vein thrombosis and in the prevention of post surgical adhesion. This product development technology has been transferred to Malladi Research Centre, Chennai. US and Indian Patents have been granted on this technology.
- A biological product from the Bacillus thuringiensis which has mosquito larvicidal property. Commercialization is being done by Tuticorin Alkali, Chennai.

- MAC Elisa kit for diagnosing Japanese Encephalitis, West Nile fever and Dengue has been transferred to Zydus Pathline Ltd. after entering bipartite agreement with BCIL, New Delhi.
- A diagnostic kit for detection of Hepatitis A has been developed and transferred to BBIL, Hyderabad through BCIL, New Delhi.
- MRC-5N Vero Cell Culture adapted for Indian isolate of Hepatitis A has been transferred to BBIL, Hyderabad for preparation of Hepatitis A vaccine. A Material Transfer Agreement has been made between BBIL, Hyderabad and NIV, Pune through BCIL, New Delhi.
- An Indian Patent has been filed for diagnostic assay for rotavirus. BBIL, Hyderabad has shown interest in this technology.
- Fertility assessment kit has been developed by NIRRH, Mumbai to estimate reproductive hormones such as estrone glucuronide, pregnanediol glucuronide, leutinizing and follicular stimulating hormone. A bipartite agreement has been made between BCIL, New Delhi and NIRRH, Mumbai for transferring this diagnostic technology for reproductive hormones to Zydus Cadila, Ahmedabad.
- MVA based HIV clade C candidate vaccine for Indian strains of HIV infection is at clinical trial stage. For the development and commercialization of HIV vaccine in India, Ministry of Health and Family Welfare, Govt. of India, Indian Council of Medical Research and International AIDS Vaccine Initiative (IAVI) have entered into an agreement. The technology will be transferred from the Therion Biologics USA to a vaccine company in India for manufacturing the MVA based HIV clade C vaccine.
- Duraphet, a fluoride containing dental varnish has been developed through extramural project funded to Shriram Institute for Industrial Research, New Delhi. The technology has been transferred to M/s IPCA Health Product Pvt. Ltd. through NRDC, New Delhi.

Benchmarking and review of performance

The ICMR has an elaborate process of review of performance and achievement.

1. A 5-yearly assessment scheme is in operation for individual scientists
2. Scientific activities are reviewed at two levels:
   i) at Headquarters
      - Governing Body
      - Scientific Advisory Board
      - Scientific Advisory Groups
   ii) at Institutes - Scientific Advisory Committee

Publications

The number of scientific papers published in indexed journals has increased (from 186 JCI/JCR papers in 2002 to 268 in 2003) and so has the average impact factor. The average impact factor of Council's publications has shown an encouraging trend 1.456 (2000); 1.661 (2001); and 2.03 (2002), 2.18 (2003) and 2.326 (2004). The average impact factor of some of the Institutes touches 5.0 for 2003-04. This is an eloquent testimony of the standard and quality of the research being carried out by the Institutes of the ICMR.

Patents

Despite its social obligations the ICMR has been able to file 39 patents including 11 foreign patents during 1996-2004.

External cash flow

Unlike other scientific organizations like CSIR, the ICMR has not been an industry oriented agency and has not been expected to generate its own resources. ICMR has not earned much from the patents filed up to now. The Council proposes to step up external cash flow through partnerships with industry for development of drugs, diagnostics, vaccines, encouraging patenting of processes and products,

and sharing of equipment and facilities on time and cost basis. During 2003-04, funds generated for projects to be completed over the next several years from external sources was almost equal to the funding it received from the Ministry of Health. This is perhaps the only organization which has generated this quantum of research funds as compared to its own budget.

Observations of PAB

The Indian Council of Medical Research (ICMR) is the apex body in India for the planning, formulation, coordination, implementation and promotion of medical research. Intramural research carried out through a network of research institutes, regional medical research centres and field stations provides support to the national health programmes. The permanent Institutes are mission-oriented laboratories located in different parts of India and address themselves to research on specific health topics. Apart from research, the Institutes are actively engaged in human resource development programmes. The Regional Medical Research Centres focus especially on the regional health problems, and also aim to strengthen or generate research capabilities in different geographic areas of the country. Extramural research is promoted by ICMR basically to strengthen the biomedical expertise outside the Council, especially in medical colleges and the University system. Human resource development in biomedical research is promoted through several long and short term training programmes and fellowship schemes. The Council has been able to respond to the changing health needs of the country, not to mention its effective response in times of medical emergencies by exploiting its extensive network and its technical expertise. In addition, the Council also takes part in surveillance activities. The achievements of ICMR are commendable and its contribution to public health is significant. The relevance of ICMR is beyond doubt.

In the context of the changing public health scenario, the balancing of research efforts between competing fields, especially as resources are severely limited, is a typical problem encountered in the management of medical research. It is important to continually prioritize the activities of the ICMR and redesign its portfolio as appropriate. This prioritization needs to be examined both at the level of the organization (ICMR) as

well as at individual institutional levels. Such an exercise should naturally take into account the adequacy of infrastructure of the organization, the institutes, the current level of activity and the future needs.

The ICMR for the first time has formulated a National Health Research Policy. This is a great step forward. The ICMR as the apex health research organization in the country should continue to shoulder the responsibility of formulating National Health Research Policy and constantly revise and link the same with National Health Policy. The Council has stepped into frontier research (such as stem cell research) either utilizing existing resources (by training or redeployment) or making new investments through extramural projects (such as genomics research).

The Board would like to commend the ICMR for its research efforts in the area of HIV infection and Acquired Immunodeficiency Syndrome (AIDS). The ICMR, in addition to initiating the National Sentinel Surveillance Programme in the late 1980's (this has now been handed over to the Ministry), has initiated a variety of programmes both extramural and intramural in the newly established National AIDS Research Institute as well as in other institutes. Of particular notice is the ICMR's involvement in the development and field trials of HIV vaccines. It must be mentioned that the highest ethical standards are being maintained in this area.

The ICMR has demonstrated leadership and has clearly proven its abilities in setting the research agenda in fields such as HIV research. In order to sustain its leadership and ensure impact in critical areas the Council should undertake large scale mission projects akin to those seen in other sectors such as agriculture, atomic energy and aerospace. These mission projects need to be identified with care taking into account ICMR's core competencies, its comparative advantages, the strength of its national and international linkages and sustainability. It is likely that partnerships may be established in some areas (HIV research) and these may be fully exploited. On the other hand in some rapidly emerging areas the Council may need to proceed on its own to establish and nurture new research initiatives. Planning and conduct of missions should be driven by a national core team and will also involve all key institutes and other partners. The Institutes and Regional Medical

Research Centres could provide necessary support for the successful conduct of the missions, including providing high-level participation, relevant technical input, depending on project needs and funding. The composition of the mission teams will ensure a skills mix that is appropriate to the project context, drawn from the Council and relevant partners, the latter identified in full consultation at the time of setting up the missions.

In addition, ICMR has assumed the role of setting standards and setting up regulatory processes to facilitate research in these emerging areas. Undoubtedly, these are areas that have enormous potential in upstream research and need to be exploited utilizing both the vast geographic network and the pool of talent available within the organization. In order to gainfully exploit these emerging areas in a sustainable fashion the Council will need to develop a road map for its activities with a 5 or 10 year profile that takes into account synergies with other sectors. This road map should to be developed in the context of the changing environment of globalization and liberalization and recognizing the potential of ICMR to make significant contributions in these areas. Several of the Institutes of ICMR are engaged in research which are also national health concerns like the research focus of NIN and Government's Mission on Nutrition Security. No effort should be spared by ICMR to position itself to be the prime mover and contributor to the Government's programme. The development of these avenues should maintain the balance that ICMR has in its product-mix. For chronic, degenerative and life-style diseases, the cost benefit ratio of investing in preventive strategies is higher as compared to treatment strategies (even in developed countries, it would be more so in low resource settings). It would make more economic sense to invest in research on preventive tools. The Council should ensure that there is sufficient emphasis on prevention research even though its benefits may not be immediately perceived. Treatment based approaches should be considered where preventive approaches are not available. Technology development should undoubtedly continue. In developing this strategic plan the Council should use illustrative examples of cost benefit analyses to highlight the impact of ICMR's presence.

ICMR should ensure that the products of its research translate into new policies that are utilized by the local research institutes, hospitals and health centres according to the local needs and circumstances.

The Council should strengthen its efforts to derive better estimates of the burden of diseases and of the main risk factors associated with major illnesses. The Council should also evolve a mechanism for monitoring of the application of the policies and develop indicators of impact on the improvement of people's health.

The Board recommends two initiatives which should improve the efficacy of ICMR. These are in response to two concerns expressed by several scientists outside the ICMR. One pertains to the considerable delays in reviewing and funding extramural research applications. The Board is of the opinion that ICMR should set up an efficient and transparent mechanism for review of applications and their approval. It should be possible for Principal Investigators to follow the progress of their applications through a secured on-line access. The second was with regard to the non-integration of the current strategies for developing and testing vaccines. In addition to the National Health Research Forum which we are recommending we feel it is necessary to have a seamless coordination in this area between ICMR and other agencies involved in vaccine research like the DBT.

The Council should continue to further expand the application of the Combined Approach Matrix developed by the Global Forum for Health Research to define the priorities, strategies and resource allocation based on saving the maximum number of healthy life-years for the given human and financial resources invested in the health research programme. There is also a need to develop cost-effectiveness analysis in each ICMR Institute (measurement of the likely number of healthy life-years saved for a given health expenditure). The Council should consider the gradual introduction of the "logical framework methodology" (also called logframe) to facilitate the systematic linkage of the vision / mission / mandate to the ultimate delivery of research results in terms of improvement in people's health.

The ICMR should be modernized and restructured if it is to be at the forefront of health research. The infrastructure needs of the ICMR should be examined in the context of modernization and up-gradation, both at the organizational level as well as the level of the Institutes. To achieve this it is necessary to develop a modernization plan that assesses the current infrastructure and outlines the future needs of the organization. This should be resonant with the projected activities of the organization over the next decade and also take into

account what needs are likely to be into the future. This will often require skills, expertise, and resources which may not readily be available within the Council. This reorganization will require developing policy documents, and procedures for implementing the Restructuring Plan. All this would take time. To cater for the needs of the immediate future a modernization package should be developed for accessing a one-time grant. This should address both the infrastructure and human resource requirements.

The benchmarking and evaluation of performance of public funded organizations in areas such as health research should be different from those institutions which are in the areas of pure science research and development. Medical research conducted by public funded organizations is ultimately used for improving public health and should be assessed in terms of its influence on and ability to change public health policy. ICMR's performance indicators must reflect its societal roles and obligations as a public funded research organization. The traditional method of assessing research output and impact is centered around a value system that places emphasis on publications and patents. Current trend to judge performance are often based on input indicators such as infrastructure development and HRD development, and these have to be modified for the Indian context. While these indicators may have value in assessing science output it may not truly reflect the impact of the research carried out by an organization in the health system, where organizations like ICMR enable improvements in individual health status and play a substantial social role. Redefining the evaluation criteria will also help to further define the character of the organization.

Budget and Finances

The financial support for a research organization is a critical rate limiting factor in its research output. In fact governance, management, human resources and finance are the four pillars on which the success of any organization depends. The PAB therefore, feels that it is appropriate to review the current fund flow and give our views on the funds required to ensure that ICMR meets its mandate and that our observations on the scientific work can be appropriately implemented.

Only since 1998-99 has the budget of the ICMR shown an upward trend. From Rs.61.0 crores it has risen to Rs.231.0 crores in 2005-06.

The allocation made in 2005-06 is compared to that 1998-99 under various head in the following table:

(*Rupees in crores*)

Heads	*1998-99*	*2005-06*
Salaries	14.849	32.830
Pension	4.699	9.770
Consumables	13.629	43.100
Travel	0.965	3.280
Equipments	6.045	8.940
Capital Works	10.228	85.370
Extramural Research Programme	10.583	47.710
Total	60.998	231.000

Unlike in 1998-99 when the Council surrendered Rs.1.24 crores as unspent funds at the end of the financial year, it has utilized every rupee allocated to it, and even more what it was offered at the revised estimate stage. This reflects the improved current utilization and absorption capacity of the Council.

The funding for medical research in the country continues to be abysmally low in comparison to population size, disease burden, and scientific opportunity. Though the annual budget of ICMR has increased several folds since the first review in 1968 (from Rs.13.85 crores to Rs.230.0 crores), so have the health problems and the cost of research. India should be spending a great deal more on medical research if it hopes to even touch the fringes of medical problems which face the country. The PAB recommends that as prescribed in the National Health Policy, the Government must live up to its commitment of increasing the funds for medical research to 1 % of its health expenditure by 2005 and 2% by 2010, which must also increase commensurate with the needs of the nation to improve health and reduce disparities in health between rural and urban and richer and poorer segments of Indian society.

Medical research is an interdisciplinary, multi-agency effort involving the government, academic institutions, and the private sector, and requiring progress in many diverse fields of science. Medical research competes annually with other worthy domestic spending priorities for its share of our National budget. Medical research is the responsibility of the National Government, and one in which the government is uniquely positioned to take the lead. The ICMR is entirely funded by the Govt. of India through Ministry of Health. Due to several reasons, the funding of ICMR depends on health budget, which itself is meager in the National budget. The current level of funding for health research is grossly inadequate. The funds available are about one third of the demand for the 10th Plan period (Rs.970 crores as against Rs.2500 crores). The Board observed that the ICMR had prepared an EFC for the entire Council for the 10th Plan for the first time and this has been approved. This is an important achievement. However, despite this approval, no new posts have been sanctioned. Further, the Board noted that substantial expenditure of non-plan nature is being met out of plan funds. The ICMR and its Institutes have demonstrated their ability to attract funds from the government and other funding agencies, both in India and abroad. While a part of this increase in funding may reflect the increased allocation of resources as part of a general exercise, it is clear that aggressive campaigning and showcasing by the ICMR leadership is, to a large extent, responsible for the current financial inflows. In addition, the Council has demonstrated abilities to expend the allocated finances in a timely fashion reflective of good project management practices. However, the Council needs to consider large infusions of funds to undertake large scale expansion and embark on mission-mode projects.

The increased budget of the ICMR since 1998 has been effectively used for the purchase of new equipment for many Institutes, construction of urgently needed buildings, enhanced amounts for consumables and as seed money for developing extramural grants. All of this is reflected in the improving impact factor of the ICMR scientific publications. However, to bring the entire organization to a level acceptable for 2005, more funds are needed so that all Institutes can be well equipped. Buildings have to be constructed for several Institutes (MRC, EVRC, IIH). This will also enable many extramural projects,

which have already been technically approved scientifically to be funded.

New proposals like setting up National Animal Resource Facility for Biomedical Research, Genome Valley at Hyderabad etc. would also need large amounts of funds. Some of jointly funded Indo-Foreign projects could not be taken up for want of funds for the Indian component of the study. The ICMR would also like to increase the number of international fellowship being currently offered.

The rise in the budget since 1998-99 has been modest, it has helped ICMR to bounce back, but it needs considerably more funds to ready itself to meet future challenges. It needs to equip itself to fully exploit the advances made in modern biology like genomics, micro-array, stem cell, proteomics, pharmacogenomics, computation biology, combinatorial chemistry etc. To meet the challenge of new and emerging diseases, a network of 3-4 Bio-safety level 3 laboratories need to be set in various regions of the country, and at least one Bio-safety level-4 lab is urgently needed. For the majority of these, planning has been completed, and the infrastructure would be in place, if funds are made available.

The financial support to ICMR should to be enhanced since its current allocations are dependent on the national health budget. Ideally, spending on health research should be at least 2% of the total health expenditure. Currently it is much less than 1%. Thus there is an enormous scope for demanding and accessing large scale increase in funding. However, this demand for new funds should be seen in the context of the ability of the ICMR to absorb these infusions and convert them into tangible products with measurable deliverables. It is also important to link this to ICMR's restructuring plans and proposed linkages in the future. The ICMR has demonstrated ability to attract foreign funding, which is another indicator of the quality of ICMR research. While Institutes attracting external resources for conducting research should exercise caution that they do not deviate from their own mandate by the influence of donors' priorities, the ICMR should now examine where leverage can be brought in for attracting more foreign funding relevant to Indian research priorities.

The Board calculated that based on rough estimates 2% of present national health expenditures would amount to Rs.2200 crores or US$ 440 million while 2% of the estimated minimum total health expenditures would amount to US$ 660 million. Ideally the annual budget of the ICMR should be Rs.2200 crores. For the 11th Plan period a minimum of Rs.5000 crores should be allocated to the ICMR.

ICMR could attract substantially larger funding from external sources if it increases its capacity to (a) present project proposals based on economic analysis and (b) convince foreign aid donors that it can manage these investments efficiently and effectively.

There should be no delay in the transfer of funds from ICMR Headquarters to Institutes for approved projects, within agreed upon budgetary levels. This can be achieved by transferring authority for the decision making and responsibility for financial expenditure of budget to the Institute level.

TOR No. 2

To critically examine the response of the ICMR to the previous Reviews

The Council has taken appropriate actions on most the recommendations made by the Reviewing Committee, 1984 with Prof B Ramamurthy as Chairman. The details are at Annexure-9.

However, the situation noted by the first Reviewing Committee of ICMR, 1964 and the subsequent review has not changed with respect to its autonomy of functioning. It is noted that an important reason why medical research is lagging behind as compared to other science and technology agencies continues to be that ICMR is not truly autonomous in its decision making mechanisms.

Secondly, the observation of the Committee in 1964 that India should be spending a great deal more on medical research if it hopes even to touch the fringes of the medical problems which face the country, is also valid today as the funding for the ICMR continues to be very meager as observed earlier.

Observations of PAB

The operational efficiency of a research organization is greatly enhanced by autonomous functioning. The ICMR was registered in 1949 under the Societies Act XXI of 1860. It is an autonomous organization within the Ministry of Health (MOH), with the Health Minister Government of India as its President and Secretary Ministry of Health as the Vice-President. The Director-General, ICMR is the principal executive officer of the Society. It is governed by the rules and regulations of Government of India applied *mutatis mutandis*. Though having an autonomous/Society model of governance, the Council is considered a subordinate office of the Ministry of Health. The Board recognized that the present positioning of the ICMR within the MOH poses challenges to its ability to function as an autonomous research organization. A restructuring of the governance pattern will allow it to function more efficiently and be responsive to the changing health needs of the country. The restructured organization would still need to stay within the ambit of the MOH since the MOH is dependent on ICMR's technical input. The Board strongly recommends a new model of governance. As is being considered already by the Government, the creation of a Department of Medical Research within the Ministry of Health, with the DG ICMR as its Secretary, should be immediately implemented. This would help the ICMR to present, defend, and secure its own budget; take decisions on spending its budget; move memoranda for Standing Finance Committees and Expenditure Finance Committees for clearances quickly; have interaction with international agencies and countries in a pro-active fashion; work on important initiatives like private public partnerships, research and development and project development as is required in current scenario; make its own projections and views in a time bound fashion reflecting scientific temperament of other science and technology organizations; improve its functioning and have its DG interact independently with the Ministers, civil society and policy leaders of the country. This would no doubt increase the autonomy level from the present setting.

However, in the current hierarchical scheme of things even this may not provide ICMR the desired space for functioning. Further essential charges in governance would be to reorganize on the pattern of a Commission (along the lines of Space and Atomic Energy) in view of the

critical role biomedical research plays in human development. The advantage of a Commission approach would be that it would speed up the decision making processes since the members of the Commission are empowered to take decisions on policy and financial matters. The composition of this commission could be on the lines of similar commissions. Consultative groups who have no voting rights consisting of other stake holders (like the State Governments) could also be formed. The constitution of the Commission is likely to send a very clear signal to biomedical research community (both public and private) regarding the importance the Government is placing on medical research. This would also boost ICMR's brand image.

The ICMR functions through a network of 26 Institutes and their field stations spread across the length and breadth of the country with their diverse mandates and spheres of activity. The Board also appreciated that the Council has been taking steps at effective linkages between these, although this requires further strengthening. A major concern is the distribution of the resources and activities over a wide geographical area covering almost the entire country. Many of these institutes were established to address issues considered relevant at the time of their creation. Over the years due to a multiplicity of factors many of these institutions and Regional Medical Research Centres have developed overlapping roles. This has led, at times, to duplication of efforts and wastage of resources. The Board recognizes that the existing institutions cannot be dismantled for a variety of reasons but dispersal of activities is not conducive for good management. The restructuring plan should review the workings of multiple institutes with their diverse mandates and spheres of activity. The Council should explore the establishment of an alternate model that would allow a cohesive approach to solving health based problems. The Council could perhaps consider bringing together Institutes that have similar priorities and expertise in a virtual manner to promote tighter management. The Council should take a visionary approach and restructure to make virtual structures that could capture the multidimensionality of the individual Institutes. This approach would have several advantages. Such a structure would allow for free exchange of ideas and resources. In addition, such a networking would allow elimination of redundancies in technical and administrative

resources. The appointment of project directors to head the missions would also help in better functioning.

TOR No. 5

To review ICMR's strategies for Human Resource Capital Development (research capacity development) in terms of Resource allocation, Opportunities, performance appraisal, Recruitment and retention and Career promotion opportunities.

Human Resource Development

The ICMR's Human Resource Development (HRD) plan is focused on formulating policies, procedures, and partnerships to ensure the scientific competitiveness of ICMR. Skilled and talented people are undoubtedly the most important resource for the delivery of high quality science and its translation for the public's health. That is why training and career development are central to ICMR's mission. The ICMR is an equal opportunity employer and practices affirmative action.

Human resource development in biomedical research is encouraged by ICMR through various schemes such as

a. Research Fellowships i.e. Junior and Senior Fellowships and Research Associateships in Extramural Research Programme. A similar programme was also available for Institute Fellowships.

b. Short-term Visiting Fellowships (which allow scientists to learn advanced research techniques from other well-established research institutes in India).

c. Short-term Research Studentships (for undergraduate medical students to encourage them to familiarize themselves with research methodologies and techniques).

d. Various Training Programmes and Workshops conducted by ICMR Institutes and Headquarters.

e. ICMR International Fellowships for young and senior biomedical scientists as well as for scientists coming from developing countries.

The Council also awards prizes to Indian scientists (young as well as established scientists), in recognition of significant contributions to biomedical research.

In addition, regular refresher and reorientation courses are offered for technical, administrative and finance staff. The staffs of the Institutes have been trained and are able to take up Good Clinical Practices (GCP) and Good Laboratory Practices (GLP) compliant studies. Recently, the Council has also started a MD-Ph.D programme. It provides financial support for electronic copy of MD thesis in priority areas of research. Various in-service training programmes for scientists and related officials are also being carried out through its institutes. Many ICMR Institutes have been accredited for Ph.D programme of Indian Universities. Some of the important courses are:

Regular courses: Super specialization (Doctorate in Medicine- DM in Haematology); Post-graduate courses: 2 year Masters course in Applied Epidemiology (FETP); M.Sc. (Applied Nutrition; Virology); Diplomate of National Board (Pathology); Diplomas (Entomology, Occupational health); Certificate course (Nutrition).

Short term courses in nutrition, virology, animal sciences, epidemiology, transfusion medicine, vector control, occupational health, entomology, genetics, and ethics.

For retired medical scientists and teachers, the Council offers the position of Emeritus Scientists to enable them to continue or take up research on specific biomedical topics.

Capacity building through extramural research programme

From 1985-86 to 2004-05 the ICMR has funded over 4900 new projects including 1400 task force projects, 1800 *ad-hoc* projects, 30 Centres for Advanced Research projects and 1600 Fellowships. Majority of these projects have been funded in teaching institutions including medical colleges. The Council has been one of the very few funding agencies which have provided grant-in-aid to medical colleges - the cradle of future researchers. Through this strategy ICMR has strived to put in place a sustainable health research system. During 2004-05, about 1050 extramural projects were ongoing, at a cost of Rs.33 crores. Half the funds went to research institutes, and about one third to medical colleges

and universities and a few to health care institutions. 540 Fellowships were awarded; 376 technical, 312 scientific staff were trained.

Recruitment policy

Recruitment Rules have been framed for all scientific, administrative and technical cadres. All lateral entry by direct recruitment is filled through open advertisement in leading national daily newspapers and Employment News. For Director level position, nominations are also asked from member of Governing Body, SAB members and Indian Missions abroad. All vacancy notices are also posted on the web-site of ICMR.

Promotional policy

Scientists: Five yearly assessment scheme is in vogue

Technical staff: Promotional scheme on pattern of DRDO has been prepared and is under consideration by Ministry of Health and Family Welfare.

Administrative Staff: There is no system of assessment. Vacancy-based promotions are effected on superannuation, promotion or resignation.

Observations of PAB

A key component of the modernization and restructuring process would be the augmentation of human resources. The Council carries a heavy and disproportionate burden of technical and administrative staff. Current recruitment policies of the Government of India preclude staffing changes that will be conducive to the conduct of research at the cutting edge of science. A recent internal estimate suggested the need for creating at least 500 new scientific positions in the organization. The ICMR must reexamine its staff requirement in the context of the programmatic framework. The Council should evolve a recruitment policy to attract and retain the right calibre of staff to meet ICMR's evolving needs. The Council should aim to employ highly qualified scientific staff to enable it to achieve its objectives and deliver outstanding results. The Council should while primarily considering qualifications, knowledge, skills and personal qualities also evaluate the capacity to adapt and evolve over the longer term.

The scientific career opportunities in ICMR should be made more attractive, not only for current employees but also for scientists outside the organization in India and abroad, and be competitive with the academic and private sectors. The Council should also consider the short-term need for flexibility and internal mobility without losing sight of possible long-term requirements for organizational change and the development of career potential. It may be necessary to restructure the compensation package offered to scientists to very generous levels by adopting an aggressive approach. At the minimum the pay structure should be on par with those of other S&T organizations in the country such as the CSIR and DBT, including positions at Scientist G and H levels. Positions of appropriate numbers of posts at the extraordinary scientists and distinguished scientists level should be created. Recognizing the societal obligations and the key role played by the organization in promoting health and the compromises that medical professionals may have to make to serve the organization the wage compensation could be much higher on the lines offered to ISRO and DEAE scientists. Similarly, the career opportunities and compensation packages of technical staff also should be re-examined.

Fellowships in ICMR Institutes, which were suspended some years ago, should be revived, revitalized and liberalized. In this programme the ICMR provides funds for appointing a given number of SRFs and RAs in its Institutes. These Fellows could be mentored by senior scientists. As happens in other international research agencies, like the NIH, those who do good work could compete for regular positions as and when they are advertised. This would give an opportunity to hire appropriate candidates, as finding suitable candidates presently through advertisements often result in no candidate being found suitable. The current inordinate delays in recruitment of scientific staff, due to administrative inertia and red tape must be removed.

Human resource development is one of the most powerful, cost effective and sustainable means of advancing health research. There should be an organized and focused effort towards formulation of a long term comprehensive human resource development policy and plan to address wide range of related issues.

A key principle that should guide the restructuring process would be decentralization. Recognizing that mere assignment of responsibilities without authority is not effective, the Council should aim to delegate

powers to the periphery with suitable empowerment of the peripheral structures. In this spirit, a number of decision making powers should be delegated to the Directors of the Institutes (or decision making process simplified). Some suggested areas include simplifications of the system of clearances, recruitment of the field of staff, purchase of equipment, condemnation of scientific equipment, foreign travel, renovations, control of extramural funds, outsourcing of pension payments, control of capital works expenditures (replaced by ex-post internal audit).

For almost twenty years, the ICMR has had a ban on creation of new positions which is continuing. Only openings available have been on superannuation or resignation of staff. It has not been possible to address cutting-edge areas of modern science adequately. Retraining and re-deployment has helped but cannot be adequate to the need. Consequently several Institutes of ICMR are sub-critically staffed. Some Institutes have a single digit number of scientific personnel. It is only because of a few key scientists that some of the centres are afloat, and if they leave the centres would collapse. There are Institutes (like DMRC, Jodhpur; CRME, Madurai) which do not have a Director's post. There are Technical Divisions at Headquarters (like Division of Reproductive Health & Nutrition) which do not have Sr. Deputy Director General position. In absence of promotional avenues some scientists at Director level are stagnating at highest level of basic pay for several years. Similarly promotional avenues for technical staff are limited. There is also an acute shortage of trained and capable administrative staff at the Institutes, while there is a large number available at the Headquarters office. A strategy should be developed for transfer of some staff to the Institutes. Need for well-qualified staff in modern management techniques cannot be over emphasized. Currently administrative staffs are approximately 36% of the total staff of the Council. While streamlining administrative procedures and introducing modern management techniques linked to optimal use of information technology, the aim should be to reduce administrative staff to 15-20% of total strength with a corresponding increase in scientific and technical personnel. In addition to improving skills of the existing staff, provision for lateral entry in the administrative and financial cadre is imperative. There is thus an urgent need for creation of new positions at the ICMR and adoption of a quick hiring process. The objective of the Policy should be to ensure the conduct of quality and relevant health research by recruiting, training, managing and retaining a sufficient number of

health research personnel based on identified priority areas of research needs and within sustainable resources.

The human resources capacity for health research is a measure of the country's capacity and capability to effectively address existing and emerging health concerns of the country. The ICMR should further strengthen its efforts to bridge the existing gap in the availability of trained human resource in health research, not only within India but also for the South Asia region and beyond. It is important to select appropriate analytical methods that would best identify current and future needs. The policy goals should be laid down clearly in the order of priority. The strategies that will support their realizations should be identified. The Board has made specific recommendations on HRD based on the above observations.

TOR No. 6

To review the relationships between ICMR and other agencies (Central/State Governments, academia, Science and Technology and health research organization)

ICMR is the only major health research agency in India. It conducts and supports a very wide spectrum of research activities spanning basic, applied and field research. It supports health research which is not supported by any other agency. Health science is increasingly becoming more complex and multidisciplinary. There is an increasing need for organizations to pool resources and expertise which adds value to the endeavors of each of the partners. The Council enters partnerships on the basis of assessed needs of the jointly agreed initiatives while respecting the autonomy of individual partners and ensuring sustainability of such partnerships.

Networking with Academia and other R&D organizations/industry

a) Academic Institutions:

- For Academic activities the ICMR has developed networking with various Universities for PhD in several disciplines.
- ICMR has academic linkages with several Medical colleges under extramural research programme (in fact all HRRCs are located in medical colleges) as well as for HRD.

- There are fruitful international Academic linkages, for example with NIH, CDC, Erasmus University, Netherlands; Oxford University and Imperial College London.

b) Other R&D Organizations:

- The ICMR has linkages with other National Scientific Organizations such as Department of Science & Technology; Department of Biotechnology; Defense Research Development Organization; National Institute of Immunology, New Delhi; International Centre of Genetic-Engineering and Biotechnology, New Delhi; National Research Development Council, New Delhi for research / training / product development activities.
- The ICMR has collaborative research projects undertaken with the National Health Programmes under the DGHS.

Observations of PAB

India has developed a unique blend of medical research institutions, from the ICMR, major teaching hospitals, and independent medical research institutes to a range of smaller centres. It also includes other S&T organizations such as the DST and DBT. ICMR has been the primary force in medical research and many of the S&T organizations have fostered the development of research institutes within their framework. Today research is increasingly separated from teaching and health care. Research is an investment for the nation and the future, but in contemporary funding climates within universities and hospitals it is increasingly becoming an optional extra, undertaken only when researchers are able to attract sufficient external resources. Removing barriers to collaboration will ensure development of broad linkages with other players in the field and allow sharing of resources. Research to deal with global health problems will necessarily be multidisciplinary, involving biomedical, clinical, public health and health services research, and include the social sciences, information sciences and engineering, physics, chemistry, ecology and environmental sciences and economics. The Board recognizing the key role played by ICMR in promoting health research in medical colleges and the potential it has for improving it in health care facilities in private sector, urges the ICMR to explore

innovative approaches to enhance research awareness and promote research done in these sectors. As the budget of ICMR increases, and the Institutes are more adequately supported, an increasing proportion of budget should be devoted to extramural research in the medical colleges and universities, as these institutions develop greater capacity to conduct research. In fact, such funding can be an instrument for development of research capacity, increase the number of physicians embarking on medical research careers, and insure that research is conducted in priority areas for the nation, defined by the ICMR itself. This is further elaborated under TOR No. 8.

The roles of ICMR relative to other agencies such as DBT and DST in the field of health research should be clearly defined. The Board is of the opinion that in order to develop a National Health Research Plan, to optimize resource allocation and to avoid unnecessary duplication and wastage, the activities of the ICMR and other Government departments involved in Health Research should be coordinated. A National Health Research Management Forum involving the highest decision making levels should be constituted. A recommendation in this regard is given later.

TOR No. 7

To review international collaborations, benefits accrued and contributions made

The ICMR coordinates the processing, implementing and monitoring of biomedical research programmes carried out under the auspices of either bilateral agreements between India and countries such as USA, France, Germany, Canada, Mozambique, Russia and other CIS countries (formerly the USSR), or as assistance from international agencies such as the WHO, Ford Foundation, Rockefeller Foundation, NIH, World AIDS Foundation (WAF), UNDP, IDRC, etc. Very recently a major south-south collaboration Memorandum of Understanding has been signed between the MRC (South Africa), FIOCRUZ (Brazil) and the ICMR to work together on health issues of mutual importance.

All proposals received from various national laboratories in India for foreign collaborative projects are subjected to a rigorous peer review

process followed by appropriate clearances from the Government of India. These programmes are intended to facilitate and promote biomedical research in areas of mutual interest to India and other countries/ international agencies, with transfer of technology being one of the prime objectives. The facilities available and the modalities of operation vary according to the country or agency concerned. Other Departments/Agencies of the Government of India also deal with similar programmes, foremost among them being the DST, DBT, CSIR, etc. The ICMR offers consultation to other organizations and interacts with agencies for the approval of proposals dealing with biomedical research for implementation.

Observations of PAB

As globalization increases, international collaborative research will also increase. The Council has played an important role in defining the limits of collaborative research and ensuring that such research is conducted in an ethically acceptable manner. Currently the Council is concentrating on bringing expertise and resources through foreign collaborations ultimately raising the standards of research to international levels. International collaborative health research must extend beyond clinical trials. The current limited approach does not allow ICMR to fully exploit the benefits of international collaborative efforts that include the sharing of international health experiences. The current mandate of the ICMR also limits it from carrying out research in foreign soil where it can utilize its expertise on common diseases. Also, the ICMR should expand its role as a nodal agency that formalizes the agenda for collaboration in the field of health research. The present mechanisms for clearance should be streamlined to offer a response time of 6-8 months.

TOR No. 8

To review the balance between intramural and extramural research programme, and between upstream and downstream research

In the context of the changing public health scenario, the balancing of research efforts between competing fields, especially as resources are severely limited, is a typical problem encountered in the management

of medical research in India as it is in most countries. Infectious diseases, malnutrition and excessive population growth have continued to constitute the three major priorities to be addressed in medical research throughout the past several decades. Communicable and non-communicable diseases and their impact on the socio-economic development process are receiving priority attention now. In addition to tackling these issues, research has also been intensified progressively on emerging health problems such as cardiovascular diseases, metabolic disorders (including diabetes mellitus), neurological disorders, blindness, liver diseases, cancer, mental health etc. Research on traditional medicine/herbal remedies was revived with a disease-oriented approach. Research areas pertaining to the control of micronutrient malnutrition, the problem of low birth weight and its effect on human health on a long-term basis are major priority areas.

ICMR has been successful in striking a balance between upstream research, which is basic as well as mission-oriented, and downstream research which is applied and operational for the successful application of research findings. Both are necessary for improving health. Downstream research requires the identification of well-tested knowledge in relevant areas of health and the processes to facilitate the application of that knowledge for adoption in health sector and policy development. Applied research should address adequately the issues related to sectoral convergence by partnership development between the community, health service providers and the Government. The Council should determine the balance between upstream and translational research based upon its mandate and its networking with other agencies. While its emphasis should be on carrying out translational and operational research it should also undertake research in areas where upstream research is critical and no other agencies have the capabilities to promote such research.

With an increase in overall funding of ICMR, there can be greater partnership with the medical colleges and universities through an invigorated programme of extramural research funding and research capacity building through fellowships and other training endeavours. Six major Technical Divisions are supporting the extramural research programme of the ICMR. Over a period of time the number of disciplines being handled by each of the Divisions has increased without

a commensurate increase in the resources (human and financial) and space. Encouraging, supporting and guiding of health research in Medical Colleges, Universities and other non-ICMR Institutes is critical for ICMR to develop its constituency. Inculcating a culture of research within medical colleges is critical for growth of health research in India.

Observations of PAB

The Council should consider increasing extramural research funding (30% at present) to optimal level, approximately 50% of its budget, in order to enlarge the circle of medical colleges and universities benefiting from ICMR funding and committed to health research. This should be done without compromising the intramural research programme. It should ensure that extramural and intramural research is linked efficiently and effectively. A healthy relationship between ICMR and the Medical Colleges, universities, and other non-ICMR research institutes involving training and research collaborations can also enhance the career structure for young Indian scientists and help in the retention of such individuals within the country. To promote this goal the Council should establish a new Division that oversees extramural research through an autonomous decision making process separated from the intramural research decision making, run by professional cadre of scientist-administrators who understand both the relevant science itself and the ICMR processes that support such science.

TOR No. 9

To review the relationship between Headquarters and Institutes

The Headquarters office is expected to provide leadership to the Institutes and act like the nerve centre. It lays down policies, guidelines, and the broad framework within which the intra and extramural research programmes operate. The Headquarters has a facilitating role and helps to build bridges and networks with other agencies within and outside the country.

Observations of PAB

The PAB found that while Institute Directors were in general happy with the scientific support that they received from Headquarters, there were also some concerns. It was apparent that while delegation of

authority to the Institutes had improved, the present pattern of functioning it still is not consonant with modern management practices and remained overly centralized and bureaucratic. In addition, it was clear that while the science and the scientists of ICMR are utilizing the powers of information technology increasingly well and the Council continues to invest substantial resources in this area of great, the administration was not similarly using modern computer based systems but still relies on handwritten notes to route files and exchange information. This has led to considerable delays in decision making. In addition, poor coordination, improper delegation of power, and a lack of clearly demarcated functions contribute significantly to these delays. It was also surprising that while the Institute Directors apparently have financial powers for procurement of equipments up to Rs.25 lakhs, in practice everything still has to be cleared at Headquarters. The PAB unanimously felt that an effective and functioning strategy of and administrative and financial decentralization is essential for the scientists to function optimally. Such a strategy can have built-in controls through budgeting, defining levels and post-facto auditing. In fact, the internal audit set up in ICMR (for Institutes and Headquarters) should be independent of the financial or other administrators and directly accountable to the DG ICMR. The internal audit staff should be well trained and skilled in modern methods of audit. It is also essential that the management strategies should be consonant with modern practices and the power of information technology should be fully harnessed to make the management effective and fully responsive to scientists. It must be part of human resource development that skills up gradation are available to both scientists and administrators and professionalism in administration is fostered.

The Board reviewed the structure and functions of the ICMR Headquarters. Among the various functions of the Headquarters formulation of policies and programmes, preparation of annual and five year plans, coordination with national and international agencies, dealing with the governmental system in respect of inputs to other Ministries, departments and agencies, responding to parliamentary requirements, overall planning of manpower and other types of infrastructural resources, as well as implementing some of the projects and programmes are some of the highlights. The board is of the opinion that the present strength of the Headquarters is on the high side. The

Headquarters should function, by and large, as a staff support to the Director General of ICMR. The Headquarters should also undertake futuristic studies as part of developing vision for ICMR with a 10 to 20 years perspective. Another critical capacity for Headquarters should be the conduct of cost-benefit analysis and other econometric studies which are of relevance to assess the impact of various activities in socio-economic terms. Specialists in these areas should be recruited to the Headquarters staff. The dangers of conducting research from Headquarters are that Headquarters may lose focus on its role as nerve-centre of ICMR and may lead to conflict of interest with the various Institutes of ICMR. To the extent possible, this should be avoided. Further, there should be a policy for rotating the research management staff of Headquarters amongst the various Technical Divisions within the Headquarters system. Also, it would be a healthy practice to periodically rejuvenate Headquarters by inducting medium and lower level scientific staff from the Institutes and similarly move some of the Headquarters staff to the various Institutes. In the opinion of the Board, a reasonable strength of the scientific staff of the Headquarters could be around 100, but this number will surely increase as extramural research is increased with a requirement for an enlarged extramural research administrative staff. A suitable structure could be evolved that would enable smooth functioning of the total ICMR system by interfacing certain cadre of the scientific community at Headquarters with the bureaucratic set up at the level of Additional Secretary, Joint Secretary etc. This would bring in a better scientific analysis of the needs of ICMR through the scientific cadre of the Headquarters with due participation from the bureaucracy. The Board recommends looking at such systems which are already in place in departments like Space.

The board recognized that the RMRCs are playing an important role in setting the research agenda in the communities they work in. They are important Institutions that have carried out translational research under difficult conditions. In the context of a matrix approach the permanent institutes would provide the vertical disease based approach while the RMRC's could effectively provide the horizontal translational platform. By converting them into full fledged institutes the Council will realize the full potential of these centres to address key research issues relevant in their geographical locations.

3
CHAPTER

TOR No. 11

To address long term standing issues of ICMR

The PAB recognized that there were several issues which are considered long-term and unsolved in the ICMR and which adversely affect the morale of the staff and the smooth management of the agency. These issues listed by ICMR administration are:

(a) Recruitment policy

- There are about half a dozen projects started in extramural mode about 15-20 years ago which are still continuing in view of the importance and relevance of their nature of their activity. They have been extended on year-to-year basis. Insecurity of job and uncertainty about future are the main concerns of the staff. These projects have contributed immensely in their own spheres of work. Efforts of ICMR in converting the activities of these projects and the staff as permanent employees have not been successful.
- The Indian Council of Medical Research has not been able to get any new posts for almost a decade due to the ban on their creation. Institutional creativity depends on the ability to recruit new young scientists with fresh ideas, and ICMR has only limited ability to do so. Rapid developments in modern biology have provided hosts of opportunities, but the Council has not been able to exploit them to the fullest for lack of human resources. Many of the frontier areas of biomedical sciences could not be adequately attended to. As a consequence of constrained recruitment, the average age of ICMR scientists is advancing (now between 45 and 50) and the grooming of the next generation of leaders is being compromised. Therefore, creation of additional of posts is very critical.

b) Rewards and recognition

- Unlike the scientific staff there is no scheme for assessment and promotion of the technical staff. A scheme was formulated first on the pattern of the CSIR and later on DRDO. It is still under consideration of the Ministry of Health. This delay is

causing considerable amount of discontent and low morale among the staff.

- The scientific staff has a 5-yearly assessment scheme. All become eligible for assessment after having put in 5 years of service in a given position. There is no provision for fast track promotion for deserving scientists. There is no incentive to work harder, and this discourages scientists.
- Senior scientists who have reached the maximum of their scale of pay are stagnating.

Observations of PAB

The Board discussed these issues at length with the administration and staff and has made appropriate recommendations which should be implemented expeditiously.