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Research in Medical Education

Evolving Paradigm between CME program and Continuing Professional Development

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Preamble*:

There is a growing concern regarding a perceived decline in the quality of research in biomedical sciences; a similar concern may be shared by scientists belonging to diverse disciplines. To a certain extent, it is a healthy sign when there is an attempt at looking inwards for self-criticism. The objective, presumably, to identify lacunae and deficiencies, if any, and to take remedial measures before it is too late. If used excessively, such a tool can build up morbid fears due to self-condemnation. As for most things in science, the essential prerequisite is rational critique of the prevailing situation in biomedical research. Indeed, the word rational itself has strong scientific connotations, as it is derived from the Greek word “*ratio*”. It is generally understood to indicate “the mean between the extremes”. The rational approach therefore in the context of present theme focused on excellence and accountability in science must also meticulously avoid the extremes of self- glorification on the one hand and self- condemnation on the other. By implication, we must also observe the necessary caution of not accepting *prima facie* the unsubstantiated claim of an allround decline in the quality of research, nor should we succumb to the temptation of endorsing the anecdotal, mostly self- glorifying, narration of high quality scientific achievements in the country in the recent past.

Resounding words of Pandit Jawaharlal Nehru enthused the audience when he said at the Inaugural function of the Indian Academy of Medical Sciences on 19 December, 1961: “**I hope the Academy would lay stress on the pursuit**

of research work and simultaneously ensure that high standards were maintained. Research is an inseparable part of any systematic pursuit of knowledge and, therefore, it is imperative that the quality should be absolutely first class.”

Two years later, we were baptized by the solemn direction of Dr. S. Radhakrishnan, President of India on 08 December, 1963 at the 1st Convocation of the Indian Academy when he exhorted and enthused the Fellows : “*But in the choice of your Fellows, be careful, be vigilant, take care of the great reputation which you should enjoy among the sister Academies of the world.*

The Message by Dr. Radhakrishnan to attain self-sufficiency in securing the national integrity and national boundaries may not have reached the desired targets. Immense efforts are essential to reach the objectives.

Since then the Academy has grown in stature as well as in its major contributions to the national issues dealing with medical education including dental, nursing and para-professional education. *Indeed, it covers all issues that constitute social determinants of health.* Thus, it is the only organization, perhaps, anywhere in the world which has such a wide range of objectives being served by galaxy of Fellows presenting more than 61 disciplines, providing large pool of talent to respond to the national needs through scientific methods of inquiry and research.

Two major achievements since we last met in Jodhpur include : 1) connectivity of the National Academy of Medical Sciences with National Knowledge

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Network. As of today we are proudly a part of National Knowledge Network which projects us amongst other premier bio-medical institutions in the country, thus offering a vast range of possibilities to channelize and reinforce all academic activities to achieve the objectives for which the Academy was established; 2) The 2nd major achievement during the year is the formal incorporation of NAMS-AIIMS Collegium in the academic framework of the Academy thus not only synergizing our efforts but also potentiating the academic outcomes. The Collegium was formally constituted on 08 February, 2013 in a meeting convened by the Chairman, Academic Council of the Academy and attended by the Directors of six AIIMS: Prof. Sandeep Kumar, Director, AIMS, Bhopal; Prof. A.K. Mahapatra, Director, AIIMS, Bhubaneswar; Prof. Sanjeev Misra, Director, AIIMS, Jodhpur, Prof. G.K. Singh, Director, AIMS, Patna ; Prof. Nitin M. Nagarkar, Director, AIMS, Raipur; and Prof. Raj Kumar, Director, AIMS, Rishikesh. Dr. Sanjeev Misra, Director, AIMS, Jodhpur was requested to act as the Convener. A set of academic activities was prioritized in the context of the 12th Five-Year Plan (2012-2017). It is a matter of pleasure that National / Regional Symposia dealing with the subjects of '**A multidisciplinary approach to Spina Bifida**' at AIIMS, Rishikesh; '**Ethics in Clinical Research**' at AIIMS, Bhubaneswar; '**Regional Symposium on Sleep Medicine**' at AIIMS, Jodhpur; '**Acute Ischemic Stroke : Basics to Advances**' at AIIMS, Rishikesh; and '**Developing a Pre Hospital Response to Disasters and Medical Emergencies**' at AIIMS, Patna was held.

Given the short span of time, these are major achievements of coordination of planning, organization, programme development, evaluation and feedback. We congratulate the six AIMS for the faith reposed in the Academy and assure them that the Academy will encourage, enhance and clarify their academic achievements.

Parametric Reference Framework:

Unlike pure sciences, medical science has always been considered to be a blend of art, science and philosophy.

Indeed, the science of Ayurveda carries with it the connotations of both human endeavour as well as divine enlightenment. Nevertheless, within this semantic constraint, it is still possible to grasp the basic definition of science in order to recognize the content and quality of scientific research within the sphere of biomedicine. It seems that it was around the beginning of the seventeenth century that the word *science* appeared for the first time in the usage of English language. At that time it was considered synonymous with *knowledge*. Subsequently it acquired the connotation of *accurate* and *systematized* knowledge. Still later, valid experiment as the source of scientific knowledge assumed critical importance. This was the age of Copernican revolution. In a way, there is a discernible commonness between Copernicus's observations regarding the planetary motions in the macrocosmos, and William Harvey's demonstration of the circulation of blood within the human organism. Both focused on motion, a *circular motion*, and more importantly both demonstrated the need of rigorous control of experimental observations so as to draw meaningful conclusions in relation to spatial and temporal dimensions of such movements, whether of planets or of plasma. William Harvey's lecture at the Royal College of Physicians, London on April 17, 1616 not only revolutionized the history and methods of scientific research in medicine, but also rejuvenated the mental attitude of men towards seeking scientific truth at a time when their minds had been bonded for several centuries in slavish submission to what Aristotle had taught and generations of medical teachers had followed. The view propounded by Harvey was so revolutionary, as was that of Copernicus regarding astronomy, but its publication was delayed for twelve years and even then the inferences were only partly accepted and that, too, with considerable scepticism.

Thus, both biomedical science as well as science in general requires generation of new and accurate knowledge, irrespective of the process through which such knowledge is derived. Indeed it is as much of science if it is derived by

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deductive logic as in Euclid or if developed through the use of precise observation and rigorous experimental condition as demonstrated by Harvey and Bacon. There is a remarkable synthesis reflected in the expression of J.B.S. Haldane who, following intensive training in western philosophy and natural sciences, also had first-hand exposure to logic and science in India. As is well known, during his later years, he became an Indian citizen. According to Haldane, the definition of science must include the following dimensions:

“First, it is the free activity of man's divine faculties of reason and imagination. Secondly, it is the answer of the few to the demands of the many for wealth, comfort and victory. Third, it is man's gradual conquest, first of space and time, then of matter as such, then of his own body and those of other living beings, and finally the subjugation of the dark and evil elements in his own soul”.

It is worth noting the key references by Haldane to “man's divine faculties”, and his gradual conquest of “his own body and those of other living beings”, thus establishing the conceptual proximity to “human and divine” in Ayurveda.

Warren Weaver's descriptive narration provides the requisite complimentary to J.B.S. Haldane's views:

“Science is obvious, therefore, that not only in biomedical sciences but also in science in general, there must be a blend of diverse but inter-related elements such as a genuine spirit of enquiry, and unsuppressed urge for the adventure of human spirit, the acute powers of observation, and the rigorous discipline of mind. Nevertheless, there are two additional critical dimensions of biomedical scientific research. Firstly, its *relevance* to the contemporary needs of the society. Secondly, its conformation to the highest principles of *biomedical ethics*, especially, when such research involves human experimentation as in clinical trials of drugs and devices.”

Health Research:

The Department of Health Research (DHR) was created on 5th October 2007 with the vision of promoting and coordinating basic, applied, clinical and operational research in areas related to medicine, health, biomedicine and medical profession and education through development of infrastructure, human resource and skills in cutting-edge areas. At the same time, the Indian Council for Medical Research (ICMR) has its own network of 31 National Institutes and also a strong and vibrant culture of extramural research in medical colleges and other institutes.

The strategies for health research in the 12th Five-Year Plan should be the following:

Address national health priorities: The key outcome of the efforts of DHR would be to generate intellectual capital, which may have a public health impact. DHR would, therefore, prioritize its research to find cost-effective solutions for health priorities and health system issues facing the country, namely:

1. Maternal and child nutrition, health and survival;
2. High fertility in parts of the country;
3. Low child sex ratio and discrimination against the girl child;
4. Prevention, early detection, treatment, rehabilitation to reduce burden of diseases—communicable, non-communicable (including mental illnesses) and injuries (especially road traffic related), congenital malformation and disorders of sex development;
5. Sustainable health financing aimed at reducing household's out-of-pocket expenditure;
6. HIS covering universal vital registration, community based monitoring, disease surveillance and hospital based information systems for prevention, treatment and teaching;
7. Measures to address social determinants of health and inequity, particularly among marginalized populations;
8. Suggest and regularly update Standard Treatment Guidelines which are both necessary and cost- effective for wider

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- adoption;
- 9. Public Health systems and their strengthening; and
- 10. Health regulation, particularly on ethical issues in research.

Build Research Coordination

Framework: Though DHR is the empowered Department on medical and health research, many organisations are engaged in research on related topics, namely the Ministry of Environment and Forest, Departments of Health and Family Welfare, AYUSH, AIDS control, Space, Science and Technology, Biotechnology, Agricultural Research; agencies like ICAR, DSIR, CSIR, NDMA, DRDO and the National Knowledge Network. DHR would play a lead role in research involving human health, bringing all the concerned organisations on one platform to facilitate mutual discussion, resource pooling and prioritisation, and avoid duplication, to find innovative solutions to national priorities in a timely manner. It would also take the lead in suggesting institutional structures, like mutual representation in each others' decision making and scientific bodies, and 'coordinating structures' so that consultation and collaboration become a norm rather than an exception. Efficient mechanisms for selection, promotion, development, assessment and evaluation of affordable technologies would be established. DHR would bring together basic, translational and clinical investigators, networks, professional societies and industry to facilitate development of programmes and research projects. DHR would establish a

mechanism for coordination between academia and the industry, with a preference for multi-disciplinary approaches.

The National Health Policy of 2002, utilizing the new name of AYUSH incorporating Ayurveda, Yoga, Unani, Siddha, and Homeopathy, noted its importance and its popularity among the underserved, remote and tribal areas.

A detailed review of the current status was undertaken during the deliberations of the Steering Committee on Health constituted by the Planning Commission, Government of India, for formulating the 12th Five-Year Plan (2012-17). The tremendous progress made in the integration of AYUSH in the health care delivery system in the country is reflected in co-location of 8366 out of 23391 units (35.77%) at Primary Health Centres, 2945 out of 4510 (65.3%) at Community Health Centres and 424 out of 604 units (70.2%) at District Hospitals under National Rural Health Mission. In nutshell, Indian Systems of Medicine indicate the need for integrated delivery of health services.

Policy of National Academy of Medical Sciences (India) has transformed from reaching few to multiple modalities and reaching many by harnessing the educational technology.

* Quantitatively and qualitatively reposing the expression of scientific policy in India.