The cervical esophagus, though no part is immune. This is the pneumothorax. This is the commonest site of perforation is unusual. Repeated crossing to the left thorax feeds after 7 days without re-accumulation of fluid.

Iatrogenic perforation of the esophagus of a neonate is an uncommon emergency and can be fatal. It usually presents acutely with pneumothorax. This is the first case report to highlight that traumatic esophageal perforation in the preterm neonate can present with acute cardiorespiratory decompensation due to chylo-pneumothorax. Transillumination of the chest aids in the diagnosis of pneumothorax in neonates. The most likely cause in our case may be orogastric tube placement. The right chylothorax may have been implicated in its etiology. The most likely cause in our case may be orogastric tube placement. The right chylothorax may have developed subsequently due to a combination of accidental milk feeds (breast and medium-chain triglyceride) and chyle. The accumulation of chyle may be due to the traumatic damage to the thoracic duct following right chest-tube placement [Figure 2].

To conclude, high index of suspicion is needed to diagnose esophageal perforation which may present as chylo-pneumothorax in a preterm neonate.

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The medical education system in India is one of the largest in the world. It comprises of 262 medical schools, most of them university affiliated, producing 29,172 doctors a year. Western medicine was introduced in India by the arrival of the Portuguese in Goa and the British in other parts of India. The British established the Madras Medical School in 1835, and in 1840 the Portuguese started the Medicine and Pharmacy Licentiates, now known as Goa Medical College. University-affiliated medical education became the norm in the 1850s, after the opening of the first three Indian universities in Chennai, Mumbai and Kolkata.

The fields of medicine and medical education have developed at an unprecedented rate in the second half of the 20th century [Table 1]. New understanding of diseases, new treatment modalities and technological advances have led to a knowledge explosion, as well as better understanding of diseases and their management. New health challenges have
Medical education in India.

Need for faculty development programs to meet medical institutions in India and highlights the overview of teachers' training programs in health for the population. This paper provides solutions for achieving better standards of will meet shortage of medical teachers and resources. Faculty development programs in medical institutions need to develop their human shortage of medical teachers, and medical degrees. This has created a marked response to the growing population and its care and medical education have not increased urgently. The medical schools in India have seen rapid growth in the last 20 years, almost doubling in strength. This growth has largely been in response to the growing population and its health needs, as well as excessive demand for medical degrees. This has created a marked shortage of medical teachers, and medical institutions need to develop their human resources. Faculty development programs will meet shortage of medical teachers and groom faculty for leadership roles to provide solutions for achieving better standards of health for the population. This paper provides an overview of teachers' training programs in medical institutions in India and highlights the need for faculty development programs to meet the challenges of the Indian health system and medical education in India.

SCENARIO OF HEALTH AND MEDICAL EDUCATION IN INDIA

Boosted by its economic growth in the last few years, India has not lagged behind in adopting new medical advances and technologies. However, the resources dedicated to health care and medical education have not increased correspondingly. Due to overpopulation and a tremendous disease burden, along with inadequate resources and policies, there has been a perpetual demand-supply gap of medical professionals as well as health care resources in most parts of the country, especially in rural India, with demand always exceeding supply. With medical colleges nearly doubling in number over the last 20 years, this demand-supply gap extends to teachers in medical colleges as well. The economic growth in urban areas has made the private sector a more attractive option for medical professionals and has complicated the situation further. Though recommended by the Medical Council of India, the training in educational techniques is not compulsory for medical teachers in India. Additionally, we have not kept pace with the emerging trends in medical education or the advances in educational research.

The following estimates are a rough guide to the ground reality: Considering that each medical college has an average of 200 teachers, the total number of teachers in 262 medical colleges is more than 50,000. Adding the number of teachers of allied specialties such as Occupational Therapy and Physiotherapy, Dentists, as well as resident doctors who teach, the total number could be double that. Assuming that each basic ‘teachers training workshop’ enrolls 25 participants with 12-15% turnover of faculty every year, about 600 workshops are needed to train all these teachers, roughly 3 workshops per year in every medical college. If a medical college wishes to introduce newer trends in education, the need is still more. Thus, the need for reform and initiating faculty development programs is urgent.

Teacher training programs will serve two needs. The first, and perhaps the more visible, need is to improve the quality of medical teachers. The second, and more important from the long-term view, is to train some from the medical faculty to become leaders who will generate solutions to meet the inevitable challenges faced by existing health care and medical education. BRIEF HISTORY OF FACULTY DEVELOPMENT EFFORTS IN INDIA Faculty development programs have not been a priority in Indian medical education. The earliest formal program was initiated in 1974, with the establishment of the National Teachers Training Centers (NTTCs) in four of the country’s premier institutions. The objectives of the NTTCs were to promote the training of medical teachers in educational science and technology, promote development and application of systematic educational process and conduct educational research. NTTCs activities included short contact programs for medical educators, training programs for medical administrators, mini courses on particular components of educational process, publications, consultancy services, curriculum development, policy advocacy and networking. The programs involved a 10-day interactive workshop covering topics such as educational objectives, educational methods, media, assessment methods and curriculum planning. Usually three participants were selected from each institute – one each from preclinical, para-clinical and clinical specialties. These participants were asked to start medical education activities on returning to their institutes. Johns Medical College, Bangalore; Seth G. S. Medical College, Mumbai; and J. N. Medical College, Belgaum, have established excellent medical education units and continue to conduct faculty development courses for medical and allied faculty members. NTTCs alone could train approximately 3,000 teachers over 20 years at four centers.

Given the total number of medical institutions in India (over 250), these programs have been obviously insufficient to meet the faculty development needs of the country.

Impact of the NTTC programs NTTCs were successful in introducing teachers to principles of educational technology. Teachers realized the need for attending such courses. In 1994, the Medical Council of India recommended the establishment of a Medical Education and Technology Cell in every medical institution. The short contact programs have been replicated by some ME units in the form of smaller 2-3 day workshops, conducted on a regular basis, focusing on newly inducted faculty. No follow-up or advanced training is offered. To our knowledge, no longitudinal programs have been developed.

These programs were supported by the WHO grants until 1984 and subsequently by the Government of India till 1999. During this period, publications such as NTTC bulletin, newsletters, books on medical education [‘Art of Teaching Medical Students’ – Bhuian, Rege and Supe (Eds), ‘Medical Education’ by JIPMER], as well as a journal ‘Trends in Medical Education’, flourished. Unfortunately, the journal could not be sustained due to financial constraints. Most of the NTTC.
activities ceased after Government funding stopped. Of the four institutions, only the JIPMER, Pondicherry, program survived, and national courses are being conducted under the program. A few institutions have well-established medical education units, that continue to conduct faculty development courses for medical and allied faculty members.

Other programs include collaborations between some private medical colleges and international institutions, like the Sri Ramachandra Medical College–Harvard Medical International partnership[10] or the collaboration between JNMC, Belgaum, and University of Illinois at Chicago,[11] to guide their faculty development efforts. Reports of educational innovations appear from time to time, but by and large, medical teachers continue to teach as they were taught.

The Foundation for Advancement of International Medical Education and Research (FAIMER) is also supporting faculty development in India. The FAIMER Institute[12] through a 2-year part-time Fellowship, teaches education methodology and leadership skills to faculty from developing countries from around the world, with an emphasis on faculty from South Asia. FAIMER Regional Institutes have been created in Seth G. S. Medical College, Mumbai; Christian Medical College, Ludhiana; and PSG Institute of Medical Sciences, Coimbatore; others are anticipated in the near several years. FAIMER has invested about $2 million since 2001, supporting over 80 medical school faculties from South Asia who have participated in the FAIMER Institute or FAIMER Regional Institutes.

CURRENT APPROACHES TO FACULTY DEVELOPMENT - GLOBAL SCENARIO[13]

The term ‘faculty development’ has been traditionally used to describe programs undertaken by academic staff in educational institutions and implies that some individual intellectual and professional growth will occur as a result of these programs. More recent descriptions include institutional growth as well, and most definitions of faculty development in literature reflect the role of the institution in the process. With broadening of the definition, the nature of these programs has also slowly, but surely, transformed. From the initial concept of workshops on teaching skills in the 70s, faculty development has broadened to include research skills and, more recently, leadership. Program durations vary from one-time, few-hour courses to several days to 1- or 2-year faculty-development fellowships. The mode of conducting these courses has also been different - from change in teaching behavior (behavioral theory) in the 70s; to engagement of learners and active learning (cognitive theory) in the 80s; to teaching as a socialization into a knowledge community (social learning theory), with emphasis on role modeling, peer review, etc., in the 90s.

It is hard to point out or define the ideal approach, and there is no ‘conventional framework’ for faculty development. However, it has been stated that the context of faculty development should govern the content. Jolly[8] cites Bland and Stitter (1988) as having reviewed faculty development programs and isolated 30 characteristics, most important of which are stated below:

1. Clearly stated and readily perceived mission
2. Systematically designed and targeted to specific sub-groups
3. Range of skills, not just teaching, should be covered
4. Theory and practice should be taught
5. Practice must be a feature of the course
6. Program personnel should maintain contact with participants
7. Faculty must be committed to the program and knowledgeable about content areas related to the discipline in which the participants practice
8. Participants should attend in groups from the same institution
9. Support should be available ‘back home’ Additionally,
   1. Faculty should be involved in designing their own program
   2. Faculty assessment can be used as an initial step
   3. Change institutional environment (Hitchcock et al.,)[14]

The journal Academic Medicine in a recent issue on educational fellowship programs for faculty[15] has published a series of articles describing several such programs in the United States. Most of the programs mirror the above-mentioned characteristics.

FACULTY DEVELOPMENT IN INDIA: SUGGESTED APPROACH

To address the current situation, a tri-level approach consisting of training for teaching, training of faculty for quality in medical education and development of leaders in education is proposed. Knowledge and understanding of the change process is integral to all the three levels.

Training of teachers

The role of teachers training in improving teaching effectiveness is well established.[16,17] These activities are highly valued by participants, and definite changes in learning and behavior are reported by them.[11] Other key features cited in literature as contributing to effectiveness include use of experiential learning, provision of feedback, effective peer and colleague relationships, well-designed interventions and use of multiple methods consistent with principles of teaching and learning.[11]

An important first step towards initiating reform would be to review our existing programs against these parameters and revise them to develop fresh formats. A variety of these are described in literature, and longitudinal formats have been found to be particularly useful to enhance the effect of workshops and short courses.[11,18-20] Content area for these programs would have to be freshly defined as well. Considering our traditional curricula, pedagogical teaching approach and traditional assessments, important topics that need to be introduced include principles of adult learning, active learning approach, self-directed and lifelong learning, newer assessment tools and contemporary assessment design principles. Since faculty development works best when related to a context, linking the training to relevant problems from their working environment would make it more meaningful and is likely to have a greater and more long-lasting impact. Given the heterogeneity of both patient populations and medical institutions, the programs need to be flexible, yet retaining their specific objectives. This requires the trainers to be skilled enough to incorporate this flexibility into their programs.
Budgetary allocations need to take into account the educational changes that may come into effect as a result of these efforts. Logistics and funding for dissemination of these programs, given the large number of medical colleges, need to be well thought out and planned well in advance. The role and participation of the Medical Council of India is critical for systematic development, dissemination and implementation of these programs.

Quality enhancement

From the time of submission of this manuscript to its revision, four new medical institutions have been added. With such rapid proliferation, quality assurance is a major challenge. Faculty training to develop and implement quality mechanisms at institutional as well as university level is urgently needed. The model of the institutional self-study process followed by an external evaluation is well established and widely used. Specifically, the model for medical institutions based on World Federation of Medical Education guidelines is currently used by the National Accreditation Council for accreditation of Indian universities and their constituent units. It is a comprehensive and well-designed format and can be used by institutions as well as regulatory bodies routinely to keep track of quality. Training resource persons associated with this process would involve development of a detailed comprehensive program.

Developing leadership

The third important area that needs to be developed is educational leadership. Programs need to be designed to educate policy makers and update them about recent advances in medical education worldwide. Specific time and resource allocation for these programs should be a priority. A key element of educational reform is educating the leaders of change about the dynamics of the change process. Knowledge and understanding of aspects of change are necessary for the implementation of the programs described above. These include engaging peoples’ moral purposes, building capacity to generate forces for change, understanding the change process, developing the learning culture and the culture of evaluation and fostering development at all possible levels. Models such as the FAIMER Regional Institutes can be used to train faculty involved in medical education units, who could then be instrumental in developing new programs and refining the existing ones.

In order to meet the challenges stated above, faculty development efforts need to be designed systematically and with due seriousness. Well-designed and properly implemented programs by committed institutions can create the desired impact as has been the case in other parts of the world. Collaborations and mutual support can hasten the pace of these developments and make them more effective.

In summary, India is already well on its way towards becoming the hub of global medical education. With increasing number of medical schools, shortage of faculty in general and trained faculty in particular is a major factor that can limit this growth. Therefore, there is an urgent need for developing well-structured faculty development programs for training of medical teachers in educational principles and educational research. This would improve the quality of medical education in India, produce medical graduates that would be accepted all over the globe, as well as cater to health needs of the country.

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