

Review Article

Changing Trends In Healthcare Delivery Systems: A Viewpoint

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Over the past century, there has been an enormous expansion of knowledge, technology and evaluation through research in the field of medical sciences. Further developments in pharmaceuticals, biomedical engineering, imaging sciences and biotechnology have accelerated modalities of diagnosis and treatment in diverse conditions.

In this background, newer challenges emerge. The cost and availability of modern diagnostic and therapeutic technologies have gradually increased. In addition, the medical expertise required to use these various modalities are highly sub-specialized; such qualified and experienced experts being few and far between. Therefore the facilities and expertise necessary to run state-of-the-art departments of Cancer or Clinical Neurosciences or Pediatric Nephrology and their supporting departments require huge investments in terms of cost and trained personnel. All this makes the availability of high-ended facilities under one roof or in one geographic location, an increasingly difficult task for healthcare providers.

Doctors and Medical Technologists are being trained in large numbers in India. However, it is becoming increasingly difficult to find doctors to run wards, ICUs and 24-hour emergency rooms throughout the country. Given the rising cost of medical education it is hard to see how this position is going to improve in the coming years.

India's population is predominantly rural and semi-urban in Tier-III and Tier-II towns and cities. With almost 60% of such people and their families spread over large geographic areas, the quick access to appropriate healthcare at any given time can hardly be optimal. Furthermore, the gradual shift of population from rural to urban settings in India has caused transportation problems within large cities, especially during the peak traffic times. The increasing population is posing a challenge to the availability of appropriate healthcare and medical expertise.

However, improvements in road access, communication networks and the internet itself are engendering a major transformation in how expert healthcare can be brought close to the patient requiring treatment in a short span of time.

The development of mobile diagnostic laboratories, imaging facilities and emergency care centers on wheels is a move in this new direction. If these can be linked to a network of highly trained Physician Assistants or Emergency Medical Services Team, who are also available on-call and can converge to the point of need, this would add great value to existing services which need to further expand.

Some specific developments that need to take place to achieve these are outlined below.

1) Expertise has to be developed on a priority basis.

In the haste to develop larger numbers of doctors, the quality of medical education should not suffer. Appropriate teaching staff should also increase with greater amount of time spent in practical training and problem solving.

It is worthwhile to consider a B.Sc. level program in Medical Science or Healthcare. These will be people trained in the basics of routine medical care, spending more than half their 3-year course along with medical teams in the field or in hospitals. These individuals, when they graduate can be useful members in a medical team either as part of an Emergency Medical Service, or in the wards or ICU of a major healthcare organization.

So also, even venipuncturists to run laboratory services, laboratory technologists, radiology technologists, EEG technologists and cardiac ECHO technologists are in great demand, many facilities languishing without the right personnel. More and diverse courses can be offered depending on manpower market demands.

2) Deploying Digital Technology.

The rise of computer technology, the development of hand-held communication and image processing devices, the possibilities for networking information and images on the internet can be limited only by human imagination. Electronic medical records, image archiving and communication devices, online automatic feed of laboratory information from samples all from remote sites onto a patient file, can instantaneously bring all this information

into a virtual clinic. If the handheld voice-image communication device allows a telemedicine patient-doctor encounter, followed by a detailed management plan by the expert, that completes a high quality clinic visit.

Placing such technology into the hands of an expert who can look at several patients in different geographic locations allows optimal use of that expertise in a short interval of time without the wastage of transportation time.

Furthermore, developments are already afoot to create Clinical Decision Support Systems. These are huge medical databases which are linked to Artificial Intelligence logic systems that can interlink data of a given patient with known evidence banks that are factored for levels of significance, risk levels, probability of complications, etc that will then return data for that given patient. They will also prompt probable diagnoses and alternate lines of investigation and treatment. In the not too distant future, if this is further linked to genomic and pharmaco-genomic and microbiological sensitivity data, the benefits and possibilities are obvious.

The goal behind this development should be to extend the knowledge power of the expert to diverse patients in a very short span of time. This would be greatly enhanced by working as a Team with the Physician Assistants as outlined in the first paragraph.

3) The Networking of Healthcare Organizations.

There is no one hospital or healthcare facility that can provide all possible medical specialties under one roof.

In fact, to excel in any one of these, the organization may have to forego some other activity to bring in resources to create and develop something of great value in a particular field. This would also mean creating all the related disciplines for that particular specialty to develop to a certain standard. For example, to run a good cancer care center, the pathology department would be a major ancillary discipline.

Transparent business systems should be in place for the sharing of confidential patient data and fees for services provided by the different nodes of care. This requires a consensus amongst the partnering groups.

To funnel a large number of patients to a particular healthcare facility, there should be effective triage systems which will also optimize the use of these facilities. Besides, patients should also be able to make decisions on the internet or phone as to where they can access the appropriate care.

4) The New Face of Medical Research

Research granting organizations both government and private should be on an aggressive search for people and organizations that can deliver quality research on given priority areas that are relevant to India, and greatly encourage and develop them.

India lacks reliable and uniformly standardized data on even the primary indicators of health like Infant Mortality and Maternal

Mortality. The requisite registries and data capturing systems have to be developed and strengthened. We need to develop disease-specific or condition-specific registries for policy makers and investors to plan development and deploy resources for effective enhancement of healthcare.

Greater interaction between basic scientists and medical workers has to take place on a large scale if India desires to be in the forefront of innovation in medical knowledge. Such translation of original and relevant research done in the laboratory on to the bedside has to be done by a team who are deeply devoted to a particular problem.

India is at the cross-roads of a major socio-economic change. Though economic advancements are clearly expected, we score poorly in healthcare indices compared to even less economically privileged nations. We need to work toward greater public-private partnership in healthcare. Some of the corporate culture and accountability has to enter governmental organizations and departments, for their efficient functioning.

The developments outlined above need advancement of technologies, software and data capturing devices all of which need further innovation. Unless funding including national budget allocation is forthcoming in these areas, we are unlikely to bring in the kind of healthcare developments that India needs to see in the near future.

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