

outpatient expenditure from the scheme, problems regarding awareness of the scheme among its beneficiaries who are automatically included under the ambit of scheme, and the best model to provide health-care insurance to be used in the implementation of the program. AB-NHPS is the largest government-sponsored healthcare scheme in the world aimed to provide healthcare facilities to over 10 crore families (8.03 crore families in rural and 2.33 crore in urban areas will be entitled), covering urban and rural poor families as per the socio-economic census of 2011. It will also benefit the lower middle-class, middle-class and upper-middle class by job opportunities in the medical sector as new hospitals will open in Tier-2 and Tier-3 cities. This scheme is targeted at poor, deprived rural families and identified occupational categories of urban workers' families. To ensure that nobody is left out (especially women, children and the elderly), there will be no cap on the family size and age under the AB-NHPS. The scheme will be cashless and paperless at public hospitals and empanelled private hospitals. At a time when cost of private health care is shooting up, a universal health insurance scheme is expected to be lapped up by the poor. The scheme can be a step in the right direction to reach out to the poorest of the poor just before the next elections. The future healthcare is seen as a high-volume, low-margin venture, inching towards universal healthcare with an active role played by the government. Healthcare industry will now be a highly regulated accountable system. It will witness the next waves of disruptive metamorphosis. Organizations that do not adapt to this new philosophy will face closure. Focus is shifting from curative medicine to disease prevention, health promotion and wellness, and compounding growth of newer areas like digital health. Skill development and newer training modules will be required for providing quality care. Operational excellence will emerge as the buzz-word. Will NHPS ensure healthcare for all and wellness for all is a matter of time to see.

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### **Is Stethoscope an Obsolete Instrument?**

Ever since the development of a stethoscope by Laennec in France in 1816 it has been constantly modified by several persons who include Arthur Leared in 1851 and George Philip Cammann in 1852 to give its present look of a bin aural instrument. A medical doctor looks incomplete without a stethoscope hanging and drooping from his shoulders. Even patients who come with complete work up done including most investigations done for example a symptomatic patient with dilated cardiomyopathy, left bundle branch block and echocardiogram showing LVEF 28% with mild mitral regurgitation seeking another opinion for the need of a CRTd implantation would expect a full clinical examination including auscultation of the heart.

In fact I have several instances when a patient referred for coronary angiography after a complete work up including a stress echocardiogram or a nuclear scan, and having taken an appointment for admission gets very disappointed if he is not examined clinically included auscultation of heart using a stethoscope. I remember a few when patient refuses to get admitted because of this inadequacy.

As a part of medical education in medical schools, students after their basic training in anatomy physiology and biochemistry are coached in the art of medicine which involves emphasis on

history taking and physical examination. The physical examination is a study of the patient using one's senses with reliance upon physical touch for interacting with the patient. For this taking help of instruments like the stethoscope is an intimate part. I remember the great feeling I got when I went to hospital wards wearing a stethoscope around my neck and appearing as an icon of our noble profession.

During the last few decades the science of ultrasonography has largely replaced clinical examination and especially auscultation. In the field of cardiovascular medicine echocardiography is the most cost effective and very frequently used method despite the development of many other sophisticated technologies. Ultrasound machines over a period of time with the development of fast microprocessors and miniaturization have become really small and can be easily kept in a pocket or physicians bag. Some machines are of the size of a smart phone and are coming down in costs very significantly. Trend is changing fast in western countries and to some extent in urban India where their use is becoming more widespread. Intensivists and anaesthesiologists are using these miniaturized devices as point of care ultrasound machines.

Well planned studies have shown that the diagnostic ultrasonography performed by first year medical students can be superior to bedside physical examination performed by board certified cardiologists in identifying cardiac abnormalities<sup>1</sup>. As the use of and training in point of care ultrasonography has grown in medical specialties, medical schools are thinking of starting to make it a part of undergraduate curriculum to instil it as a teaching tool to enhance their diagnostic skills. This could also become an adjunct to traditional teaching of anatomy and physical diagnosis and represent a transformative change for medical training. Several medical schools in USA have started ultrasound training in the undergraduate curriculum starting from anatomy and physiology in first year itself and continue it into clinical training and correlation with physical examination and problem oriented training<sup>2</sup>. The miniaturizing of these machines is really remarkable and these may become even smaller than our current cell phones. Additionally these are likely to incorporate the facility of amplifying lung sounds, heart sounds, murmurs, bruits and bowel sounds etc.

The down side of these developments is that misdiagnosis is possible by partially trained newcomers giving sometimes a false sense of security by under diagnosis or raising unnecessary alarm for a wrong or over diagnosis. Cardiology residents after full clinical training need at least 6 to 8 weeks for getting a basic training in echocardiography.

Another issue is these devices given in the hands of students and residents can distract them from the value of learning the basic principles of physical examination.

There are some issues in that as a general rule most new technologies start their origin from above downwards in hierarchy. After the accomplished clinicians and Professors use it or see it being used then only a nod is given to the younger physicians and trainees. If however medical students start learning this technology and go armed with this and its diagnostic powers their tutors and future examiners are going to desist it and may call it cheating. This is because the history followed by clinical examination is traditionally a prelude to investigations like X ray, ECG and then comes echocardiography or ultrasound and Doppler. This is the system practiced in our teaching institutions both for Doctor of Medicine, DM (University teaching) and Diploma of National Board, (DNB) and also while evaluating students in examinations.

The issue of replacing the stethoscope with ultrasound machines cannot be a debate of any sort in our country where the public health system is very different from the countries where this debate is possible and is on-going. This is because of the widespread availability of technology in the health sector. The healthcare system in our country is organised into primary, secondary, and tertiary levels. At the primary level are Sub Centres and Primary Health Centres (PHCs). At the secondary level there are Community Health Centres (CHCs) and smaller Sub-District hospitals. Finally, the top level of public care provided by the government is the tertiary level, which consists of Medical Colleges and District/General Hospitals. Ultrasound or echo machines of very variable quality are available at district hospitals and General hospitals. The quality of these machines is very variable and the clinicians handling them may not be able to interpret the images very well and need to refer these patients to higher centres. In this situation a well-trained MBBS doctor after a reasonably good physical examination, coupled with an x ray and ECG reaches a good working diagnosis. This has been going on since a long time. The number of Primary Health centres and the secondary and tertiary level centres has improved in the last 70 years after we became independent. In spite of this a large segment

of population has to depend upon semi-literate healers who may have spent some time observing doctors in dispensaries' or practitioners of other systems like Ayurveda, Unani and Homeopathy etc. Most of them invariably have not received any formal training. Valentine Fuster<sup>3</sup> in a recent editorial has dwelt upon the unique personal relationship between a physician and a patient which stems from the physician's reliance upon physical touch to diagnose and interact with patients. He also goes on to describe a number of clinical cases where auscultation clinched the diagnosis even after an echocardiography report was available. These entities were pericarditis without effusion, pulmonary hypertension without tricuspid regurgitation, presence of a third sound and Austin Flint murmur in presence of an echocardiographic diagnosis of moderate aortic regurgitation. These classical examples so well illustrate the utility of a good physical examination and should set at rest the debate that Ultrasound and its miniaturizing is the only way forward. There is no doubt that these advances are very relevant but not at the cost of so called "old fashioned" physical examination. Stethoscope is here to stay for times to come not only in a country like in India but also in the most developed countries. In spite of the availability of modern technology a basic question that, whether it improves the medical care and is cost effective. New is not always synonymous with better.

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