Since its inception in 1987 as an Autonomous Postgraduate Medical Institute under the Union Government, NEIGRIHMS has nearly completed three decades of its existence. Over these years it has matured as a medical institute of repute, providing affordable and quality health care, medical education, training and capacity building of healthcare professionals, and acting as a centre for medical research. NEIGRIHMS is a fully residential institute, with faculty, staff and students from different parts of the country living harmoniously in a beautiful scenic campus. Our faculty are next to none in quality and professionalism. Students who have passed out from this institution have an excellent track record in postgraduate and postdoctoral courses in the best of the institutes of the country.

Our patients are not just restricted to the home state of Meghalaya; we cater to patients from all the neighbouring states of Assam, Arunachal Pradesh, Manipur, Mizoram, Nagaland, Tripura, Sikkim, West Bengal and Bihar, and occasionally from neighbouring countries as well like Bangladesh, Bhutan, Myanmar, Nepal etc. The patient load is rapidly increasing over the years. Besides providing tertiary-care clinical services in all broad specialties, our institute provides high end super-specialty diagnostic and medicare services in interventional cardiology, open heart surgery, neurology, neurosurgery, urology, minimal access surgery and hybrid procedures, with access to high end technologies like ECMO, interventional and endovascular radiological diagnostic and therapeutic procedures. Ours is the only Institute in the North East Region to have a state-of-the-art Viral Diagnostic Laboratory (VDL) and a high end Molecular Pathology Laboratory.

In academics and research, NEIGRIHMS has Graduate Medical and Nursing courses, besides postgraduate and postdoctoral courses in various disciplines. The institute regularly conducts Clinical Grand Rounds and Clinico-Pathological Conferences, as well as National and International Conferences and Workshops in different specialties. NEIGRIHMS is also the east-zone telemedicine hub of the country. Besides our regular intramural projects which we fund, senior faculty of our institute are Principal Investigators of many extramural, collaborative research projects, funded by different government agencies like ICMR, HRD, DST and DBT. Within the last one year alone, our faculty have come out with a large number of research papers and chapters in reference books. With its excellent infrastructure and a sprawling campus, it is an ideal destination for scientific conferences and conventions and a potential hub for medical tourism, keeping in tune with the “Look east” and now “Act east” policy of the government.

There is an oft-quoted aphorism, "Not only must justice be done; it must also be seen to be done." Just doing is not enough; it is our responsibility to make the public aware how we are placed as an institution in the national scenario. This will not only be of benefit to the community at large, but will also boost the morale of our faculty and staff to perform better. Primarily with this thought in mind, the concept of bringing out this news magazine has materialized.

This inaugural issue of ‘PULSE – the NEIGRIHMS News Magazine’ is being released on the auspicious occasion of the 6th Annual Day Celebrations of NEIGRIHMS on March 5, 2016, with the determination and hope that this news magazine reaches out to the people with the message, “NEIGRIHMS - the Destination for Quality Healthcare and Seat of Medical Education in North East India” and “Centre of Excellence” in the country!

Prof. A. G. Ahangar
Essence of Modern Medicine: “Treatment has to be better than the disease or infirmity itself”.

... it is not a ‘doctor-centred’ versus ‘patient-centred’ care; shared decision making should be the ultimate goal in patient care.

KAYA KALP scheme is a blessing in disguise for all the government hospitals especially the tertiary care facilities as the criteria shall guide these institutions on the various...

The objective is to demonstrate the best in the analysis and treatment of difficult clinical problems in real-life patients who often tell their own story. The patient remains our link between current research and modern therapeutics.

“I wondered how could 3-D software literally ‘perform dissection’, and would it dare to revolutionize the conventional cadaveric dissection……” Dr Sarah Ralte

The World Health Organisation defines Pharmacovigilence as the science and activities relating to the detection, evaluation, understanding and prevention of adverse reactions to drugs or any other medicine related...

Use of technology in nursing education has significantly changed teaching strategies and will continue to challenge nurse educators in the years ahead.

Basic life support refers to maintaining an airway and supporting breathing and the circulation. ....and is the foundation for saving lives following cardiac arrest.

“the delivery of health care services, where distance is a critical factor ....”
The northeast region of India is unique in several aspects; some very appealing like the abundance of its natural resources and scenic beauty, lesser environmental pollution and the simplicity of the people; other more challenging, like poor health infrastructure, difficult geographical terrain and poor connectivity within the region and with the rest of the country. The health challenges of this region are also unique. The prevalence of infectious diseases like malaria, Japanese encephalitis, and tuberculosis is higher, and their pattern differs from other parts of the country. While some non-communicable diseases like obesity, diabetes and hypertension are less commonly found, the incidence of cancer is exceedingly high compared to other parts of India, with certain cancers being the highest in the world! Further, tobacco related cancers, more specifically of Meghalaya, are the highest in the country. However, the exact reasons for this diversity of diseases are not known, although various reasons like differences in ethnicity, food and cultural habits, have been cited.

North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, or NEIGRIHMS in short, is the third national medical institute created by an act of Parliament after AIIMS, New Delhi and PGI, Chandigarh. It has the distinction of being designated ‘Institute of National Importance’ in 2000 by the then Hon’ble Prime Minister of India, Sri Atal Behari Vajpayee, and declared an ‘Institution of Excellence’ by an act of Parliament in 2007. Its name makes this institution unique on two counts - the words ‘regional’ and ‘health’; giving it a regional identity for northeast India and identifying this medical institute as an institute of health, albeit well deservedly.

Being the only national institute in the northeast with high research potential, there is huge scope for NEIGRIHMS to pioneer in the field of research to scientifically look into the reasons for this disease diversity and the underlying factors; and formulate remedial measures, both preventive and curative, which can be translated to the community for the overall improvement of health.
This unique position of NEIGRIHMS as a regional institute of national importance cannot be undermined. The goal of Universal Health Coverage, as envisaged by the World Health Organization and World Bank, is to ensure that by 2030 everyone has access to essential, quality health care, regardless of their ability to pay. We at NEIGRIHMS, by utilizing our resources and capabilities optimally, can contribute significantly for the improved healthcare for this region in particular and for our country in general.

Publishing a news magazine for this institute of repute has been a dream for many years, and it is with the initiation and guidance of the Director, Prof. A. G. Ahangar, this has materialized. The purpose of this news magazine is to inform and entertain the public about the existence of NEIGRIHMS as an institution for quality health care, teaching and research, the happenings at NEIGRIHMS, the challenges that we face, the work that we do, the areas where we excel, or should have excelled. In short, it is the pulse of NEIGRIHMS, of its faculty, its staff, its students, its patients and their attendants, and all those who have made the very existence of this institution a reality. It is for you to keep the ‘pulse’ of this magazine beating in the years to come, with your contributions, constructive criticisms, suggestions and encouragement. On behalf of the editorial board, I extend our thanks to the Director, Prof. A. G. Ahangar for his initiation and lead, constant guidance, help and encouragement in bringing out this magazine. I also thank our Dean, Prof. V. Raphael, Deputy Director (Administration), Mr. David Umdor, the members of the editorial advisory board and all other esteemed members of the faculty for their guidance and encouragement. My special thanks go to the members of the editorial board and the support staff, for their help and support, and to all those who have contributed their write-ups, photographs and ideas for the magazine. Finally, a special thank you to Drs Jamil, Aakash and Kishore for their constant efforts, often stretched beyond limits, in making this magazine see the light of the day.

Prof. Prasanta K. Bhattacharya
What is patient safety?

In modern Healthcare the key component of the management is “Evidence Based Medical Practice”. Therefore, the safety profile of this Health Care Management System has no scope whatsoever for any errors that would undermine the very essence of “Scientific Approach”.

**Patient safety** is the absence of preventable harm to a patient during the process of health care. The discipline of patient safety is the outcome of coordinated efforts to prevent harm, caused by the process of health care itself, from occurring to patients

An example of a medical error taking place in a busy tertiary care hospital in India:

A young woman aged 22 years admitted for elective tonsillectomy to a tertiary care hospital. Physical examination and investigations were within normal limits and there was no history of allergy to any drugs. Pre operatively she was put on injectable ceftriaxone 12 hourly and she already received two doses without any untoward effects. Immediately after receiving the third dose of the injection she developed severe respiratory difficulty and lapsed into unconsciousness. She was rushed to the ICU but all resuscitative measures failed to revive her. An enquiry committee, set up to find out the cause of sudden death of this apparently healthy young woman, found that the regular nurse was on leave and patient was injected propofol, an anesthetic agent, intravenously instead of ceftriaxone by the ad-hoc nurse on duty, who confused the brand names of these two drugs! The on-duty nurse was found guilty and was dismissed from service and the matter ended there.

However, many questions remained unanswered…

This or similar incidents are not uncommon in most hospitals, not only in developing countries but in the most developed countries of the world. Betsy Lehman, a knowledgeable health reporter for the *Boston Globe*, died from an overdose during chemotherapy. Willie King had the wrong leg amputated. Ben Kolb was eight years old when he died during “minor” surgery due to a drug mix-up. These horrific cases, which have occurred in the US that made the headlines are just the tip of the iceberg. Two large studies, conducted in Colorado & Utah and in New York, USA, found that adverse events occurred in 2.9 and 3.7 percent of hospitalizations, respectively. In the former, 6.6 percent of adverse events led to death, as compared with 13.6 percent in the latter. In both these studies, over half of these adverse events resulted from medical errors and could have been prevented.

When extrapolated to the over 33.6 million admissions to U.S. hospitals in 1997, the results of the study in Colorado & Utah imply that at least 44,000 Americans die each year as a result of medical errors. The results of the New York Study suggest the number may be as high as 98,000. Even when using the lower estimate, deaths due to medical errors exceed the number attributable to the 8th leading cause of death. More people die in a given year as a result of medical errors than from motor vehicle accidents (43,458), breast cancer (42,297), or AIDS (16,516)

What is Medical Error?

**Error** is defined as “the failure of a planned action to be completed as intended (i.e., error of execution) or the use of a wrong plan to achieve an aim (i.e., error of planning). An error may be an act of commission or an act of omission”
Medical error is a preventable adverse effect of care, whether or not it is evident or harmful to the patient. This might include an inaccurate or incomplete diagnosis or treatment of a disease, injury, syndrome, behaviour, or other ailment.

Medication error: Any error occurring in the medication-use process, e.g. wrong dosage prescribed, wrong dosage administered for a prescribed medication, or failure to give (by the provider) or take (by the patient) a medication.

Adverse drug event: Any injury due to medication, e.g. a wrong dosage leading to injury (e.g., rash, confusion, or loss of function) or an allergic reaction occurring in a patient not known to be allergic to a given medication.

An estimated 142,000 people died from adverse effects of medical treatment in 2013 compared to 94,000 in 1990.

Magnitude of the problem

The magnitude of medical errors is huge even in western countries. Several studies carried out to assess the rate of adverse events across various health institutions in the US, UK, Australia and other developed nations in Europe show a very disturbing trend, with adverse event rates ranging from 3.2% to 16.6% (Table 1).

To discuss this issue further, let us analyse this issue with some unwanted outcomes that can occur in various clinical settings: (i) A patient scheduled for an amputation of the right leg has the left leg removed; (ii) A patient is discharged from the hospital after myocardial infarction without having a β-blocker prescribed; (iii) A hospitalized patient with multiple medical problems dies of cardiac arrest. The endotracheal tube inserted during the resuscitation is found to be in the right bronchus; (iv) While waiting for correction of coagulopathy, a patient with overwhelming infection, multi-organ failure, and pleural effusion dies before having thoracentesis to check for empyema.

Which of these incidents represents a medical error? Is there a difference between these? If so, which types contribute to the alarming estimates of medical errors in our health care system? The first two cases are clear examples of errors, but why is the first incident so much more shocking than the second? The first is of an individual and immediate tragedy, although the second, from a population perspective, is far more common and likely to result in death, but is lost in a population statistic, because it does not cause any dramatic event in a particular individual. The third case represents conspicuous error in intubation of the patient. However, one is led to think whether it has led to any significant effect on outcome, given the survival rate of hospitalized patients who have cardiac arrest? The question that arises is: do failed interventions represent an error when they do not affect the outcome? The fourth case is debatable in this clinical setting whether the intervention will improve the outcome. If the patient died without having the procedure, the omission might be labelled an error. If the patient died of a bleeding complication after thoracentesis, the decision to do the procedure might be considered an error. From these seemingly diverse situations it is clear that different incidents have multiple underlying factors and the reaction to these incidents is different with enormous amount of speculations/dimensions.

Medical errors have overlapping causes and terminologies (Figure 1). Some, like the amputation of the wrong limb or the administration of the wrong drug, are glaring examples of medical negligence. On the other hand there are many such incidents which occur even without the direct knowledge of the care-givers. Others occur as a result of unusual adverse events even after utmost care to prevent such events. However, one common factor in all these is that these medical errors are potentially preventable in most instances.

Table 1: Magnitude of Medical Errors

<table>
<thead>
<tr>
<th>Study focus (Year)</th>
<th>No of hospital admissions</th>
<th>No of Adverse Events</th>
<th>Adverse Event rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Medical Practice Study, NYS, USA</td>
<td>30 195</td>
<td>1 133</td>
<td>3.8</td>
</tr>
<tr>
<td>Utah-Colorado Study (UTCOS), USA</td>
<td>14 565</td>
<td>475</td>
<td>3.2</td>
</tr>
<tr>
<td>UTCOS, USA</td>
<td>14 565</td>
<td>787</td>
<td>5.4</td>
</tr>
<tr>
<td>Quality in Australian Health Care Study (QAHCS), Australia</td>
<td>14 179</td>
<td>2 353</td>
<td>16.6</td>
</tr>
<tr>
<td>QAHCS, Australia</td>
<td>14 179</td>
<td>1 499</td>
<td>10.6</td>
</tr>
<tr>
<td>UK</td>
<td>1 014</td>
<td>119</td>
<td>11.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>1 097</td>
<td>176</td>
<td>9.0</td>
</tr>
</tbody>
</table>
Types of medical errors:
According to Leape L. L. et al there are different types of medical errors (Table 2). These can be broadly classified into (i) errors of diagnosis; (ii) errors of treatment; (iii) preventive errors and (iv) miscellaneous types of errors.

Measuring Errors – whom or what to blame?
In most instances, an adverse event is the outcome of several latent errors that culminate in the final event. Some of these errors may be readily identifiable or glaring, while others may be too subtle to draw any specific attention as a cause of the adverse event. In his book ‘Normal accidents living with high-risk technologies’, Perrow gives an account of a series of mishaps that resulted in his missing an important appointment: (i) oversleeping, (ii) difficulty in making coffee, (iii) leaving the car key in the house, (iv) locking himself out of the house, (v) coincidentally having lent out his spare key to someone which is usually kept in the adjoining bushes; (vi) a bus strike, and (vii) lack of taxis due to the bus strike. He finally asks, “Where is the fault?” He asks for the cause of his missing the appointment from the list as follows: (i) all of the above, (ii) any one of the choices, (iii) none of the above. The best answer is not “all of the above” or any one of the choices, but rather “none of the above.”. . . The cause of the accident is to be found in the complexity of the system. That is, each of the failures—design, equipment, operators, procedures, or environment—was trivial by itself. But the cumulative effect of all these events has led to the catastrophe. Identifying one of these events as a cause of the adverse event will not prevent such errors to occur in the future. To bring the first example of administration of the wrong drug, mere terminating the services of the on-duty ad-hoc nurse will not prevent further such errors! The fault was in the system, she happened to be the final pathway of the complex system of potential errors, as is exemplified in the classic ‘Swiss-cheese’ model.

<table>
<thead>
<tr>
<th>Types of Errors</th>
<th>Examples</th>
</tr>
</thead>
</table>
| Diagnostic     | - Error or delay in diagnosis  
                 - Failure to employ indicated tests  
                 - Use of outmoded tests or therapy  
                 - Failure to act on results of monitoring or testing |
| Treatment      | - Error in the performance of an operation, procedure, or test  
                 - Error in administering the treatment  
                 - Error in the dose or method of using a drug  
                 - Avoidable delay in treatment or in responding to an abnormal test  
                 - Inappropriate (not indicated) care  
                 - Incompetence of the professional |
| Preventive     | - Failure to provide prophylactic treatment  
                 - Inadequate monitoring or follow-up of treatment  
                 - Inexperience of the professional |
| Other          | - Failure of communication / cross consultations  
                 - Equipment failure  
                 - Other system failure; Lack of Coordination / Competence / Multidisciplinary Approach |
Why do errors occur?

The common initial reaction when an error occurs is to find and blame someone. However, even apparently single events or errors are due most often to the convergence of multiple contributing factors. Blaming an individual does not change these factors and the same error is likely to recur. Preventing errors and improving safety for patients require a systematic approach in order to modify the conditions that contribute to errors. The problem is not bad people; the problem is that the system needs to be made safer. Current conceptual thinking on the safety of patients places the prime responsibility for adverse events on deficiencies in system design, organization and operation rather than on individual providers or individual products. Adverse drug events in the Utah-Colorado Study in USA provide a dramatic example, where 75% of them were being attributable to system failures. Similarly, most adverse events are not the result of negligence or lack of training, but rather these occur because of latent causes within the systems.

How should one proceed?

Although there are vast number of errors, a very small subset of errors demands attention because its existence undermines both the public’s and the profession’s confidence in the whole system. They represent egregious failures of a structure or process of care that directly results in a bad outcome. Emphasis should be laid on those errors with a potential for causing serious harm. The institution or organization should carry out ‘root-cause analyses of these potentially harmful errors for remedial measures, instead of setting up an enquiry to fix the blame on one or few individuals, who incidentally, might have been the final pathway in the chain of events that led to the event.

Establish Priorities among Errors

What distinguishes these errors? If we recall the four examples of medical errors, we can plot these scenarios along the two dimensions of causality and egregiousness (Figure 2).

Clearly, amputation of the wrong leg has this high degree of causality and egregiousness. However this type of error is rare. One should focus on the vast majority of errors that occurs as a result of multiple lapses in the system, each one of which alone does not result in a catastrophic outcome, but a series of such lapses often lead to serious outcomes. We need to focus on these errors on the basis of a different approach: the likelihood that they cause serious harm, how easy it is to prevent them, and a rigorous assessment of potential adverse consequences of the changes required. Rather than a crusade against all errors, one should have a focused and targeted approach. This focus cannot be achieved by case study and stories, although a few of these may suggest a starting point. Establishing priorities ensures that our resources will not be wasted. It also allows us to better quantify the magnitude of the error problem.

Enhancing the safety of patients

Enhancing the safety of patients includes three complementary actions: (i) preventing adverse events, (ii) making them visible, (iii) mitigating their effects when they occur. This requires increased ability to learn from mistakes, through better reporting systems, skilful investigation of incidents and responsible sharing of data. Importance should be placed on increasing the capacity to anticipate mistakes and probe systemic weaknesses that might lead to an adverse event. Further, it is important to identify existing knowledge resources, within and outside the health sector and to stress on improvements in the health care delivery system itself, so that structures are reconfigured, incentives are realigned, and quality is placed at the core of the system.

*Director, NEIGRIHMS
References


A young woman consults a cardiologist because of chest discomfort. The cardiologist determines that the heart is normal and refers her to a pulmonologist, who finds that the lungs are working fine, and in turn refers her to a gastroenterologist, who determines that she has gastro-esophageal reflux disease, a condition where the contents of the stomach flow up into the esophagus due to some laxity in the valve between the esophagus and the stomach, and administers the actual treatment. Each clinician has executed his or her duty with authority and skill, but the patient had to shuttle from one doctor to another, with mounting tension and anxiety and after spending considerable amount of time and money. Such a scenario is not uncommon in today’s urban medical practice, where majority of the doctors is clustered.

What if this patient had consulted the general practitioner in her home town instead of visiting the busy specialist in the metropolis? A little more time spent on the clinical history, taking into consideration the person as a whole, her age and habitat, would have probably brought out the common possibility of her complaint, thus obviating the burden of multiple referrals and a lot of money spent. Gone are the days, when the local family physician would visit your neighbour’s house when the grandmother falls sick. He may not have asked for a MRI of the knee or a Deya scan to determine how much calcium her bones contain, but would surely have taken into account her age and the socioeconomic circumstances contributing to the knee pain. He would also probably have advised some simple measures of pain relief rather than asking for a joint replacement, given the degree of mobility she would require for her day to day activities, keeping in mind the overall risk and cost of the surgery as well.

In the ‘traditional medical model’ of patient care, doctors play the dominant role in diagnosing the illness, deciding appropriate treatment, and assuring that the treatment is carried out as prescribed. The role of patient is to make an initial crucial decision whether to put themselves in the hands of the doctor. The doctor is then in charge of, and responsible for treatment of the illness, decisions for all investigations and interventions including surgery, and other issues relevant to the illness of the patient. While the doctor acts as the active, powerful, knowledgeable person taking control of the care process, the patient remains passive, accepting, compliant, and dependent on the doctor’s medical knowledge and goodwill. This traditional medical model is the dominant paradigm in our health care system, and this concept is deeply ingrained in the training and practice of medicine and is accepted by the society at large.

With the advent of consumerism in the healthcare sector, use of newer and sophisticated investigative procedures to assist the doctor, sub-specialization of virtually every branch of medicine, patients are increasingly being referred from one specialist to another, with more and more investigations done at every step. Multiple referrals and ‘high-tech’ investigations are usually advised for all categories of patients, irrespective of the severity of the illness, patient affordability, and overall benefit of such investigations. This leads to escalating health costs, both to the state and to the individual. The patient is considered more as a conglomeration of multiple ‘physiologic components’, and the specialist is to detect whether the ‘component’ under his expertise is at fault or not. Many a times, one fails to appreciate the person as a whole, his interaction with the environment that has probably led to the disease, how the person appreciates his disease and what he really wants from his doctor. However, being unwell has two concepts - the disease and illness. Disease refers to something which is wrong in the biology of the body; illness, on the other hand, is the patient’s personal experience of sickness - the thoughts, feelings, and altered behaviour of someone who feels sick. A particular disease is what everyone with that disease has in common, but the illness experiences of each person are unique. Disease and illness do not always coexist.

A person’s perception of being healthy or unwell is quite different from the doctor’s perception of health and disease. A person may have a disease, but may be totally asymptomatic, leading to a false perception of being well. For example, high blood
pressure or diabetes may be present for a long time without any symptoms. On the other hand, a person who is biologically normal may not feel quite so for very many other inter-related factors, and may consider to be suffering from some ‘illness’. In some areas these two overlap, when the person with the disease also feels that he is ill, i.e. when the disease is actually symmetric (Figure 1).

The ‘traditional medical model’ approach by the doctor would work effectively in symptomatic disease, but would be less convincing to the person who has an asymptomatic disease like hypertension or diabetes, and would be ineffective in those with a perceived ‘illness’ without any biological disease. In these latter situations the traditional approach would not be as effective, and due consideration should be given to the person as a whole, taking into consideration his concept of the illness, his family, his environment, including his job and all other things with which the person is socially connected. This approach of patient care, deviating from the traditional model, is called the patient-centred approach, which was first coined by the British psychoanalyst Enid Balint in 1969. It seeks to focus medical attention on the individual patient’s needs and concerns, rather than the doctor’s. It takes ‘into account the patient, the social context in which he/she lives, and the complementary system devised by society to deal with the disruptive effects of illness’.2

‘Patient-centred’ care focuses on four principal dimensions of patients’ experiences: their ideas about what is wrong with them; their feelings about their illnesses, especially their fears; the impact of their problems on functioning; and their expectations about what should be done. The key to this approach is attention to patients’ cues related to these dimensions; the goal is to follow patients’ leads, to understand patients’ experiences from their own point of view.

There are several advantages of the patient-centred approach to healthcare. Firstly, focussing attention on the overall patient outcomes rather than on treating the disease increases the quality and safety profiles in healthcare delivery, often at the cost of the doctor’s ‘autonomy’. Secondly, since multi-speciality medical care has become prohibitively expensive, with most expenses borne from out of pocket expenses, a patient-centred approach, with shifting of care from the specialist to the primary care physician, could reduce the cost of healthcare.

Even in developed countries, assessments of quality of care and health outcomes have not so far incorporated patient-centeredness. Rather, measurement of quality has addressed preventive and disease-specific care processes, e.g., counselling for smoking-cessation or initiation of appropriate medications after myocardial infarction, etc. Similarly, outcomes measurement has focused on condition-specific indicators, both short-term, (e.g., glycated haemoglobin and hypertension control) and longer-term (e.g., disease-free survival), as well as overall mortality. Though these process and outcome measures work well for relatively healthy patients with single diseases, they may be inappropriate for patients with multiple conditions, severe disability, or short life expectancy.3

Going a step further, it has been advocated that healthcare should be focussed more towards a goal-oriented patient care. Considering the rising cost of health care services in the US, major efforts have been launched to make healthcare more patient-centred, which should be “respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.”4

This goal oriented care, would focus on a patient’s individual health goals like symptoms; physical functional status, including mobility; and social and role functions, and determine how well these goals are being met. For example, in a traditional model, goal of treatment of heart failure or cancer is disease-specific, and looks for disease-free survival. Whereas, in goal-oriented outcomes, if survival is not a high priority goal, survival until personal milestones are met would be the target, e.g. survival till the son completes education and gets a job, or till the daughter is married off, etc. Similarly, in the management of chronic diseases like diabetes or chronic bronchitis, in a traditional model, although a certain blood glucose level or pulmonary-function test value are targets for treatment, these may not be the goals from the patient’s point of view. For the

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Figure 1 Patient’s perception of ‘disease’ and ‘illness’. [Source: Weston WW et al, 1989]
patient, living with diabetes without its disturbing symptoms or repeated hypoglycaemic spells; or in case of chronic bronchitis, to be able to walk to the bus-stand or climb the flight of steps in the office would be the goals.

This goal-oriented patient care approach has several advantages. This approach simplifies decision making for patients with multiple conditions by focusing on outcomes that span conditions and aligning treatments toward common goals. Choices to deescalate treatment for one condition in order to optimize treatment for another can be made in the context of whatever therapy is most likely to achieve the patient’s goals. For example, a patient with hypertension and postural hypotension may opt to forgo blood-pressure lowering treatment in favour of being able to walk with less fear of falling, with a resultant gain in short-term function.

Goal-oriented care prompts patients to articulate and prioritize which health states are important to them. Thus, patients can be in control when treatment options require trade-offs, e.g., better symptom control at the expense of potentially shorter life span. Such trade-offs are currently made, for example, when patients choose to receive palliative care and decline aggressive treatment of their medical conditions. If they know what health states are most desired, patients and clinicians can agree on steps that can be taken to achieve these goals and monitor progress in reaching them. This approach allows for effective shared decision making, with the patient selecting the health outcome of highest priority and the clinician determining what treatment strategies are most likely to achieve that outcome.

However, patient centred approach is not without its limitations. For example, acute illnesses or emergency care cannot totally adopt the patient-centred approach and urgent critical decisions have to be taken by the treating doctors. Similarly, complicated medical issues would also put the doctor in the dominant role in patient care. In the same way, not all patient goals may be realistic or attainable. The guidance, supervision and counselling by the doctor is always important.

The most important barrier to goal-oriented healthcare is that medicine is deeply rooted in a disease-outcome based paradigm. Rather than asking what patients want, the culture has valued managing each disease as well as possible according to guidelines and population goals. Nevertheless, good practice of medicine is about doing right for the patient. For patients with multiple chronic diseases, severe disability, or limited life expectancy, any accounting of how well we are succeeding in providing care must above all consider patients’ preferred outcomes.

Finally, it is not a ‘doctor-centred’ versus ‘patient-centred’ care; shared decision making should be the ultimate goal in patient care.

Selected References

*Professor & Head, Department of General Medicine, NEIGRIHMS; Email:pkbdr78@gmail.com

Medical Professionalism

‘Medical professionalism cannot be imposed by governments or by a regulatory culture. It must emerge from and be sustained by doctors themselves. “Medicine is a vocation in which a doctor’s knowledge, clinical skills, and judgement are put in the service of protecting and restoring human well-being. This purpose is realised through a partnership between patient and doctor, one based on mutual respect, individual responsibility and appropriate accountability”.’
KAYA KALP is a much needed scheme by the Ministry of Health & Family Welfare, Government of India with a view to maintain the highest level of hygiene and sanitation in the public hospitals through a set criteria so as to bring in a change in the mindset and perception about public hospitals. Kaya Kalp scheme for tertiary care hospitals have been evolved with the following objectives:

a) To promote high degree of cleanliness, hygiene and infection control practices in public health care facilities.

b) To inculcate a culture of ongoing assessment and external review of performance related to hygiene, cleanliness and sanitation in central hospitals/ institutions.

c) To create and share sustainable practices related to improved cleanliness in Central Government hospitals / institution linked to positive health outcomes.

In this matter, the Ministry has decided to incentivize and recognize such public healthcare facilities (central government hospital / institutions) that show exemplary performance in adhering to standard protocols of cleanliness and infection control, by identifying the cleanest health facilities through an institutional mechanism. The scheme assesses the performance of the facilities based on the following parameters:

i. Sanitation and Hygiene
ii. Infection Control
iii. Hospital upkeep
iv. Waste management
v. Hygiene Promotion
vi. Public Participation

Each criterion is weighed through a set of sub-criteria. At NEIGRIHMS an internal assessment committee has been constituted with representatives from general administration, hospital administration, surgical specialties, medicine specialties, microbiology and nursing administration to do the preliminary assessment which shall tell us where we stand before taking up any improvement measures. This team has also been assigned to take up all such activities required for coordinating with all sections for remedial measures.

Our accomplishments so far
On preliminary assessment the...
internal assessment team found that NEIGRIHMS has a lot of positive points, although there are certain areas requiring improvement.

a. Sanitation and Hygiene: the procedure and documentation is in place except for certain infrastructural problems in some areas. The technical knowledge of the managerial staff was found to be excellent. Lack of materials for PPE was also noted in some areas. Linen management needs improvement.

b. Infection Control: Even though most of the staffs are aware of the Universal Precaution, hand washing techniques, etc., reinforcement is required for spill management, isolation practices, use of PPE, adherence to the Protocol for PEP. The level of sensitization, awareness on the infection control programme and hospital acquired infection surveillance needs to be augmented. There is an urgent need for antibiotic policy of our own hospital. IEC material on infection control activities shall also be required to be highlighted & displayed in areas where it was not found.

c. Hospital Upkeep: The overall appearance and ambience of the hospital provide a sense of well-being to the patient. Even though there is greenery all around, the landscaping and gardening needs a professional touch. The Institute’s expanding patient care services, along with increase in the need for materials and manpower indicates for a separate Central Store & Ancillary Store area with proper protocol for maintenance of furniture & fixtures. The rain water harvesting system for water conservation has been established in the hospital and needs to include more rooftop area.

d. Waste Management: The technical know-how with proper documentation was found to be in place. Segregation at source, collection, storage and disposal practices of the biomedical waste is done as per the BMW management rules. As recommended for hospitals with more than 500 beds, mechanized cleaning has also been implemented in the hospital.

e. Hygiene Promotion: All employees are sensitized on the universal precaution to be taken, BMW management, importance of hand-washing, for which regular trainings and sensitization programmes are being conducted. In the wards, the nursing staff also educates the patients and their attendants regarding cleanliness and hygiene. Information is also displayed in the various areas of the hospital.
KAYA KALP, THE ROAD TO HOSPITAL CLEANLINESS IN NEIGRIHMS

...infrastructure for storage of new items, repairable ones, condemned articles, etc separately. More IEC materials regarding hygiene and cleanliness must be made available for patients, attendants and the visitors in the form of poster displays, leaflets, etc. Coordination amongst all the sections in the hospital and administration is required for taking up the remedial steps for further improvement of services.

Conclusion

KAYA KALP scheme is a blessing in disguise for all the government hospitals especially the tertiary care facilities as the criteria shall guide these institutions on the various ways to maintain cleanliness and hygiene of the hospitals. This in turn shall improve surveillance, monitoring of the infection control activities of the hospital. This movement shall certainly change the overall image of the government hospitals in bringing them very near, if not at par to the corporate hospitals. Especially so the Central Government institutions which offers high-end services in minimal cost through well qualified healthcare professional shall benefit immensely in providing psychological satisfaction to the patients which it lacks at present.

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f. Public Participation: The Institute promotes good work done by the various categories during the Annual Day Celebration on 4th & 5th March of the Year wherein sanitation, out-sourced, nursing, technical, security and medical personnel are given awards and recognition for their outstanding contribution.

g. Cleanliness drives: cleaning drives are conducted throughout the year with community participation by various NGOs, paramilitary forces, students, staff, etc. Every year during ‘Vanmahotsava’ plantation drive is taken up in collaboration with other organizations, schools and colleges. Feedback from the public on cleanliness is looked into promptly by the administration for further improvement.

What more can be done

The Internal Assessment report has shown us where we have to put in more effort. More trainings and sensitization workshops are to be arranged frequently for all categories as per the need. Strict compliance to the SOPs for BMW management, hand-washing and other activities is required. Hospital support services such as linen management, drinking water and sanitation, kitchen services, security services and the outsource services management needs enhanced monitoring mechanism. The equipment in these areas must be covered under proper maintenance protocol to assist in smooth functioning of the services. The Store section requires revamping in terms of infrastructure for storage of new items, repairable ones, condemned articles, etc separately. More IEC materials regarding hygiene and cleanliness must be made available for patients, attendants and the visitors in the form of poster displays, leaflets, etc. Coordination amongst all the sections in the hospital and administration is required for taking up the remedial steps for further improvement of services.

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*Resident Administrator, Department of Hospital Administration,
**Assistant Professor, Department of General Medicine, NEIGRIHMS; email: drskonwar@gmail.com
Clinical Grand Rounds at NEIGRIHMS: Take home messages

Grand rounds are an important teaching tool and ritual of medical education and inpatient care, consisting of presenting the medical problems and treatment of a particular patient to an audience consisting of doctors, residents and medical students. They are formal meetings at which physicians discuss the clinical case of one or more patients. They from the backbone of residency trainings in medical institutions across the world, wherein new information are being taught and clinical reasoning skills enhanced. Today grand rounds are an integral component of medical education. They present clinical problems in medicine by focusing on current or interesting cases. They are also sometimes utilized for dissemination of new research information. The tradition of Medical Grand Rounds at Johns Hopkins can be traced back to William Osler, the first professor of medicine, beginning in 1889; the patient and specific clinical problems have always been the focus of discussion.

The objective is to demonstrate the best in the analysis and treatment of difficult clinical problems in real-life patients who often tell their own story. The patient remains our link between current research and modern therapeutics.

Although clinical seminars were held in this institution since 2009, regular Clinical Grand Rounds, or CGR, started from the later part of 2012, when Prof. A. G. Ahangar took over as the Director in October 2012. Under his initiative CGR has become a major academic activity of the institution. Held compulsorily every Saturday from 9.00 to 10.00 am in the academic block of the institution, it has become a major academic exercise for the entire medical and nursing faculty, resident doctors, post-doctoral, post-graduate and undergraduate students of the institution. Every department present their case by turns according to a preset routine. Interesting and unusual clinical cases, innovative surgical procedures, hospital statistics, recent advances in different specialties and mortality reviews are presented and discussed in the CGR, with a final summarizing comment and take-home message by the Director of the institute. On occasions, visiting international and national guest faculty also shares their experiences on this platform of CGR.


Case presentation from the department of Neurosurgery
Chondroblastomas: The rarest of the rare tumours

A six year old female was admitted to the department of neurosurgery with complaints of stiffness, weakness and pain in both lower limbs for two months with associated history of occasional episodes of fever, fall in school six weeks back and a history of contact to tuberculosis. On neurological examination there were features of lower motor neuron type paraparesis in the background of fever and gradual progression. A working diagnosis of Pott’s spine/
Arachnoiditis/ Acute Flaccid Paralysis was made and evaluation initiated. Neuro-radiological investigation with MRI and CT scan threw up a possible differential diagnosis of Koch’s spine/Eosinophilic granuloma/ Metastasis. A CT guided FNAC was done which was inconclusive. Under the strong suspicion of spinal tuberculosis patient was put on anti-tubercular therapy and discharged with advice of follow up MRI. The clinical condition of the patient showed no improvement. She was re-admitted and a repeat MRI was done. The MRI showed an impression of unlikelihood to be Koch’s spine and possibilities of exuberant callus/vasculitis/auto immune disease. Haematological work up showed a negative ANA and a raised erythrocyte sedimentation rate. A posterior trans-pedicular decompression and biopsy was done. Histopathologically it showed a possibility of exuberant callus with a possible differential diagnosis of osteosarcoma. The child was discharged with advice to follow up. However, the child failed to come for follow up and presented six months later with deteriorating clinical condition having weakness of the lower limbs, abdominal pain with fever and urinary retention. An urgent MRI was repeated which showed a possibility of an osteoblastoma. Child was operated upon and sample sent for histopathology. Histopathology report showed evidence of a chondroblastoma. The child’s clinical condition improved and was discharged with the advice to continue physiotherapy and be on Taylor’s brace for 6 weeks. She continues to do well in follow up.

Chondroblastomas are rare benign cartilaginous tumours which comprise of 1% of all bone tumours. Localization in spine is rare (1.4%). Only 30 cases have been reported in literature till date. They generally have a subacute presentation with local neural compression symptoms. Pathologically they consist of sheets of uniform round- to polygonal mononuclear cells admixed with scattered giant cells. The mononuclear cells are uniform with well-defined cytoplasmic borders, clear to slightly eosinophilic cytoplasm, and occasional nuclear grooves. Characteristic chicken-wire calcification is needed to confirm the diagnosis.

**Take home message:** Some diseases may be statistically rare in the community, but in clinical practice your next patient may have that rarest of the rare disorder. Therefore one should try to exclude even the rarest possible disease if it does not fit into some definite diagnosis.

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**CGR presentation from the department of CTVS**

**Extra corporeal membrane oxygenation (ECMO) an Experience in NEIGRIHMS**

**Dr J P Kalita, Prof M K Saikia, Prof A G Ahangar**

Extra corporeal membrane oxygenation (ECMO) is defined as the use of a modified cardiopulmonary bypass circuit for temporary life support for patients with potentially reversible cardiac and/or respiratory failure. In today’s date, the ECMO is an accepted treatment modality for neonatal, pediatric and adult patients with cardiac and/or respiratory failure failing to respond to conventional medical therapy. The Extracorporeal Life Support Organization (ELSO) is an USA based international consortium of health care professionals and scientists who are dedicated to the development and evaluation of novel therapies for support of failing organ systems. ELSO has developed certain guidelines outlining the ideal institutional requirements needed for effective use of ECMO.

Indications of ECMO are increasing, and from the neonatal experience, it would appear that the key to making successful use of ECMO in adults is the proper patient selection.

This programme has been started in NEIGRIHMS for the first time in entire eastern India in public sector institutes and hopefully it will serve the needy section of patient population.
Dr. Dale Williams is Professor and Chair of the Department of Biostatistics, and Director of Integrated Biostatistics & Data Management Center at Florida International University, USA. He is the Principal Investigator; US National Institutes of Health (NIH) Fogarty International Center funded program on clinical research and capacity building training for Non Communicable Diseases (NCDs) in India, now undertaking its 14th year. Dr Williams and his team of US faculty have been involved in this training program in India for the past 14 years. As part of their outreach program on capacity building in the Northeast, Prof Williams and his team has visited NEIGRIHMS to conduct a workshop on research methodology in January 2016. During this visit he was kind enough to share his experience and thoughts on clinical research training in India in one of the CGR.

Dr. Williams has extensive national and international experience in population based research, clinical trials and clinical research training with a focus on NCDs. Among his academic and research career spanning over five decades across several continents, he served as Chair of the Global MONICA Network for WHO; member of the Executive Committee for the WHO Coordinated MONICA Project, consultant to the WHO European Regional Office on Guidelines for Monitoring Cardiopulmonary Disease and its Risk Factors, coordinator for NHLBI of the US component of the US Exchange in Cardiovascular Disease Epidemiology with Poland, China and the USSR, each of which lasted about 20 years.

What have been the accomplishments of this 14-year program on clinical research and capacity building training for Non Communicable Diseases (NCDs) in India:

This 14 year program in India has led to an enhanced understanding of the current and potential future impact of NCDs in India. It has also enhanced the awareness of need for focusing attention to NCD. It has also enhanced awareness that a focus on NCD can result in a rewarding career. This program has also enhanced awareness and capabilities of several hundred clinicians and scientists across India during the process of training and has helped in capacity building moves in different health institutions across India where such trainings have been undertaken, or such training imparted to the faculty of such institutions.

However one needs to answer some important questions for NCDs:

How can we maximize on evolving technology to improve community health, and how we can focus and channel the evolving and increasing standard to living for positive NCD health impact. Further, on the lines of infectious diseases one can ponder whether there can be a ‘Herd Immunity’ for NCDs? For NCDs, a related concept is that, the higher the level of community awareness along with directed, and direct, community action, the lower the levels of preventable NCDs. This almost certainly requires a focus on communities with an emphasis on household and family units within those communities.

How can we enhance NCD ‘herd immunity’?

This can be done by maximizing on use of existing knowledge, increasing the NCD prevention knowledge base, by increasing NCD prevention knowledge penetration into the community by increased community, household and family participation.

Important questions to be addressed are:

How can we best adapt and apply approaches which are proven to be successful in other countries, cultures and social settings to impact our home communities in India? And, will it be relevant to apply approaches from developed world applications to the low and medium income countries (LMICs) like India.

Some of the more important issues which need to be addressed:

It is critical that solutions for addressing the growing NCD burden in LMICs emanate from within the LMICs directly, with solutions need to build on existing knowledge as much as possible. Such solutions need to be very efficient in order to maximize on limited resources as expected in the LMICs. However, such solutions are likely to require more infrastructure than can be accommodated comfortably.
However, there is a curious barrier to bring such changes:

There is conflict within the scientific community, with ongoing string of conflicting study results. It is curious that conflicts within the scientific community are barriers to community acceptance and utilization of scientific results when many, perhaps most, health behavior decisions are based on no science at all.

What about the future? Some concerns

The pace of NCD risk factor growth is most disconcerting. The pace of growth of NCD cases is likely to continue to increase and to create an ever increasing treatment and community burden. If the resource demands for meeting treatment requirements exceed system capacity, how will prevention be addressed?

Research infrastructure needs likely to become increasingly more critical

Research infrastructure issues which needs to be addressed in India

Some of the issues that need to be addressed include (i) Inadequate data management support capacity;(ii) Inadequate biostatistics support capacity;(iii) Funds for larger, more multi-center research projects with potential for higher impact.

Case presentation from the department of General Surgery

Looks can be deceptive at times

A case of a rectal mass

R. Hajong*

A 34 year old married lady was admitted to the department of general surgery with complaints of blood in stool and painful defecation for one and half years, with progressively increasing constipation and associated weight loss. She had pulmonary tuberculosis in her childhood. She also had a prior urological surgery, the details were not available. She was a non-vegetarian, non smoker, non-alcoholic and her menses were regular. None of her family suffered from any cancer.

On examination she was of average physical built. Physical examination revealed no abnormalities and she was clinically stable. On per rectal examination there was a circumferential growth felt at 4 cm from the anal verge and the lumen allowed only one finger. Upper limit of the growth could not be felt. The growth was firm to hard in consistency, not friable, with adhered overlying mucosa. Introducing fingers were stained with sero-sanguinous non-foul smelling discharge. Per vaginal examination showed posterior wall fullness with free vaginal wall. Based on the clinical features a provisional diagnosis of carcinoma rectum was made. Routine blood examination showed mild anemia and an elevated erythrocyte sedimentation rate of 39 mm. Her carcino-embryonic antigen (a marker for cancer in the body) was elevated [20.18 ng/ml; ref 0-5 ng/ml]. Other biochemical tests were normal. Colonoscopy showed a circumferential mucosal irregularity with thickening with narrowing of lumen seen from 5 cm from anal verge to approximately 8 cm proximally. Ultrasonography of the abdomen showed features suggestive of hepatic secondaries, borderline splenomegaly and irregularities in the wall of the urinary bladder. Contrast enhanced CT scan of the abdomen showed concentric irregular wall thickening of the rectum with meso-rectal fascia thickening with infiltration and lymphadenopathy suggestive of malignant aetiology with hepatic metastasis.

For confirmation of tissue diagnosis a punch biopsy was taken. Surprisingly the biopsy report showed only non-specific inflammatory changes without any evidence of malignancy. A repeat colonoscopic biopsy was done which again failed to show any evidence of malignancy and showed only non-specific inflammatory changes. A third biopsy was done based on the persistent suspicion but that too yielded similar results.

A needle aspiration of liver mass was also done which too showed no evidence of malignancy.

Thus we were faced a situation where the clinical findings and imaging studies indicated a diagnosis of malignancy but repeated histopathological studies, the gold standard for the diagnosis, did not show evidence of any malignancy. Such cases pose a diagnostic challenge to the clinician to decide between a grave diagnosis of malignancy and a relatively benign diagnosis of non-specific inflammation.

Take home message: Even a clinical diagnosis of cancer on clinical grounds may, very rarely, turn out to be a benign and treatable disease. So the clinician should always be careful and make decisions based on evidence and sound reasoning.
One of the most exciting sports extravaganzas of South Asian countries, the 12th South Asian Games, was hosted jointly by the two northeast cities of Guwahati and Shillong from 5th to 16th February 2016. Of the 23 sports events, 16 were held in Guwahati and 7 at Shillong.

It is certainly a great boost to Northeast India, as this step will put northeast India in the map of international sporting events. The Opening Ceremony was held on 5th Feb at Indira Gandhi Athletic Stadium, Guwahati and on 6th Feb at Jawaharlal Nehru Stadium, Shillong. The Logo of 12th South Asian Games had 8 petals representing the 8 nations which participated, with orchids and ‘Gamosa’ as a symbol of northeast culture and tradition. The Mascot was “Tikhor”- a baby rhino symbolizing the pride of Assam, with the motto of 12th South Asian Games being, “Play for Peace, Progress and Prosperity.”

Successful conduct of these games has written a golden page in the history of North Eastern region. It has not only set a quality benchmark for conduct of future games, but has also given an astounding boost to the confidence of the North Eastern region to host much bigger international sporting events in future. The Games have also provided a huge boost to the sports infrastructure for sportspersons in this region to hone their sporting skills.
It is expected that the Games will help boost trade and tourism among the eight South Asian countries who participated in the meet.

The Games had further added a feather to the cap of this prestigious institute, NEIGRIHMS, which co-hosted some indoor sports events. Our indoor stadium, with a seating capacity of 1,200, with wooden flooring and all supporting facilities of international standards, along with adequate parking space proved an appropriate host to the game of Taekwondo from February 13th-15th. The matches were attended to crowds which were packed to the rafters and aptly enjoyed to the brink. Medical staff from the institute provided standard of care medical facilities to the players and the crowd during the time course of the event.
NEIGRIHMS
Emerging centre for Conferences and Conventions

Aakash Roy* and Sunibala Moirangthem**

North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS) is a medical institute in the educational hub hills City of the Northeastern India, Shillong, popularly known as the "Scotland of the East".

Location and Connectivity: Shillong is well connected with the rest of the country. A four-lane highway takes about 2 – 2½ hours to Guwahati, the commercial hub of the northeast, from where one can connect with the rest of the country by air as well as by rail. Besides, there is an airport at Umroi airport, about 30 KM from Shillong, having helicopter and air services to Guwahati and Kolkata. The institute campus sprawls over an area of 273 acres at Mawdiangdian, on the outskirts of Shillong (also called New Shillong), which is about 6–7 km from the heart of the city and takes about 20 minutes to drive. The best way to reach NEIGRIHMS is from the Police Bazar, the commercial centre, located at the heart of Shillong. Local taxis, government and private city buses and shared cabs ply between NEIGRIHMS and other important locations of the city. One can also reach the institute through the bypass, without entering the city.

Facilities: NEIGRIHMS is endowed with state of the art facilities that exemplifies its prowess for being a potential hub for scientific conglomeration. The institute is equipped with an auditorium of greater than 1000 seating capacity and has all necessary facilities for hosting of programmes of international standards. The auditorium is supplemented with 4 lecture theatres which can further accommodate another 400 people. Besides, there are other smaller lecture rooms of 50 – 70 seating capacity, adjoining different departments, which can be used to run simultaneous workshops when necessary. The auditorium and lecture theatres are fully equipped with modern audio-visual facilities.
The institute has a modern Indoor Stadium which was one of the venues of the recently held recently hosted the 12th South Asian Games 2016. These facilities can serve the purpose for holding scientific exhibitions of grand dimensions. Complementing these facilities is the institute’s own playground for outdoor events, a tennis court, along with a guest house with attached conference hall and dining hall located within the main institute campus for easy accommodation of guests visiting the institute. A community block adjoining the guest house has provision to serve as a convention centre and food court, besides the facilities of a nationalized bank, ATMs, post office and department store. For additional accommodation, new hotels and rest-houses are coming up in the adjoining areas of the institute, over and above the various hotels and guest houses to suit all budgets, located in and around Shillong.

Adjoining sites of tourist attraction: Shillong is one of the most attractive tourist destinations in north-east India. Endowed with a subtropical highland climate, Shillong enjoys cool summers laden with heavy picturesque rainfall and cold dry winters. October to November and March to April are the best months to visit Shillong. There are several tourist destinations and places of interest in and around shilling city which include Elephant Falls, Lady Hydari Park, Wards Lake, Shillong Golf Course, Motphran: The “Stone of France”, Shillong Peak, Capt. Williamson Sangma State Museum, Don Bosco Centre for Indigenous Cultures, The Entomological Museum, Cathedral of Mary Help of Christians, Bishop and Beadon Falls, and Crinoline Falls to name a few. Moreover, a visit to Shillong is can be made more interesting by visiting some of the adjacent tourist spots of Cherrapunji, Mawsynram, Tree Root Bridges and Dawki.

The amenities available in the institute, the picturesque tourist spots and pleasant climate pave way for NEIGRIHMS to be a potential hub for scientific conferences and conventions. This is supplemented with the overall cordiality and generosity of the indigenous people of the northeast, which should make NEIGRIHMS, an attractive place of visit to the medical scientific community for scientific meets and a tourist destination.

Conferences and workshops at NEIGRIHMS: NEIGRIHMS has been the venue for a large number of scientific events over the years. Besides holding workshops regularly on a fortnightly and monthly basis, the institute has the credibility of successfully hosting large regional, national and international scientific events over the years. To name a few, during the month of October 2015, it has hosted a regional conference of cardiac surgery and two national conferences of virology and nursing respectively, and in January 2016 an international workshop on research methodology, each hosting hundreds of participants from across the country.
Gallbladder is a sac like organ situated under the liver and functions mainly to store, concentrate and secrete bile into the duodenum. It contracts due to vagal stimulation and cholecystokinin and relaxes in chronic starvation, parenteral nutrition and loss of vagal stimulus as in patients undergoing vagotomy. Gallstone disease is a common problem in this area of the country and is a result of interaction of various factors. Familial and genetic factors, disorders of lipid metabolism, dietary factors, infection of biliary tract, worm infestation, female gender, bile stasis due to starvation, parenteral nutrition and vagotomy, haemolytic anemias and various medications predispose a person to develop gallstone disease.

The patient may present with vague postprandial dyspeptic symptoms like fullness and discomfort after having fatty-spicy food which is often wrongly attributed to peptic ulcer disease. Gallstones can cause acute cholecystitis or biliary colic and sometimes, if the gallstone is impacted in the neck of gallbladder, may lead to mucocele and empyema. Large and multiple gallstones may even lead to gallbladder cancer in long run. If the stones slip into bile duct, may cause cholangitis, pancreatitis and obstructive jaundice and rarely may cause intestinal obstruction and internal fistulae as complications.

The patients have to be operated if they are symptomatic for the gallstones. The treatment of choice is laparoscopic cholecystectomy which is widely available and currently the most common operation done worldwide. This involves dissecting and removing the gallbladder from small ports in the abdomen, one each in epigastrum, umbilical region, right hypochondrium and mid-axillary line between the iliac crest and costal margin. It is a low risk, low morbidity surgery and provides permanent cure for the gallstone disease. This surgery is sometimes done prophylactically for suspicion or risk of malignancy or before transarterial chemoemboization for liver cancers.

Laparoscopic cholecystectomy can be performed in day care setting in a wide number of patients with good outcome. Patients may sometimes develop serious complications like bile duct injury. But with the advent of better imaging, along with increasing surgeons’ experience the incidence of bile duct injury is not alarmingly high.

At NEIGRIHMS, we are performing laparoscopic cholecystectomy by using only two ports routinely; which leads to less postoperative pain and better cosmetic outcome. The patient is worked up on outpatient basis and admitted as per the schedule. The patient has to bear nominal costs of consumables and medications and the surgery is free of cost. The patient is able to take liquids on the same evening and is usually discharged the next day. More than 150 patients are operated per year for laparoscopic cholecystectomy without any significant complications.
Hearing plays an important role in speech and language development, communication, learning and education. Hearing loss is not just an ailment of old age. It can strike at any time and any age, even childhood. Cause can be either congenital or acquired. If classified temporally, it can be either prelingual i.e. before acquiring speech or post lingual, after acquiring speech.

Diagnosis of deafness imposes negative effect on whole family. Children with deafness are likely to experience delayed developmental milestones. This leads to isolation, low self esteem, behavioral, psychological and learning difficulty. If the hearing loss is identified in the early part of life and if intervention is initiated in the early part, the less serious effect will be on child’s development. Degree of hearing loss ranges from mild to profound. Hearing aids help patients with moderate to severe sensorineural hearing loss by amplifying the sound but not in patients with profound loss. But if there is bilateral severe or profound sensorineural hearing loss and if there is no benefit with hearing aids, cochlear implant is the established and accepted treatment available.

A cochlear implant is a small, complex electronic device that restores hearing and helps to provide a sense of sound to a person who is profoundly deaf or severely hard-of-hearing. Unlike hearing aid, which simply amplifies sound, a cochlear implant converts sound energy to electrical impulses which are then transmitted to the nerve of hearing that carries the auditory signal to the brain. The device bypasses damaged parts of the auditory system, thereby allowing individuals who are profoundly hearing impaired to receive sound.

The implant consists of an external portion that sits behind the ear and a second portion that is surgically implanted under the skin. At our centre in NEIGRIHMS cochlear implant is done regularly in the Department of Otorhinolaryngology and Head and Neck surgery since 2011. Consultation with pediatrician, radiologist, audiologist and speech therapist is made for proper selection.
of cases before surgery is undertaken. Switching on and speech processor tuning is done 3-4 weeks after surgery. Mapping is done at periodic intervals till a stable map is achieved follow by intensive rehabilitation programme.

Cochlear implant which otherwise cost more than 6 lakhs is provided free of cost in NEIGRIHMS under ADIP scheme (2014-2016) by Department of Disability Affairs, Ministry of Social Justice and Empowerment, Govt of India. Moreover other related treatment is also provided free of cost at our centre from investigation to surgery to rehabilitation with special care provided to our patients.

With this initiative by Govt of India under ADIP scheme the advantage of cochlear implant surgery which costs above six lakhs, which was at one time seemed to be out of reach for poor man, can now be availed by the people here in NEIGRIHMS free of cost. And lastly the good news is “today the deaf can hear again today with Cochlear implant”.

The concept of prosthesis-patient mismatch (PPM) was first introduced by Rahimtoola in 1978 as the situation in which “the effective prosthetic valve area, after insertion into the patient, is less than that of a normal human valve”. By this definition, nearly all patients receiving a prosthetic aortic valve will have some degree of PPM, as the sewing ring, struts and leaflets of prostheses produce a relative obstruction to blood flow. The main goal of aortic valve replacement (AVR) for aortic stenosis is to alleviate the pressure and volume overload on the left ventricle, allowing remodeling and regression of the ventricular mass. This requires a valve substitute of adequate size for the specific patient. Pibarot and Dumesnil defined PPM as a prosthetic valve effective orifice area indexed (iEOA) to BSA of 0.85 cm²/m² or less. They estimated that it occurs in 19—70% of patients undergoing AVR, and suggested that it might be associated with less regression of left ventricular (LV) hypertrophy, more cardiac events, and lower survival. The usual procedure of root enlargements is Nick’s technique of posterior enlargement at near NCC-LCC commissure and supraannular placement of aortic valve in tilting position towards NCC commissural area. A rhomboid shaped pericardium was used to dilate the root in one patient and Dacron patch was used in the rest. There were three female and two male patients. All patients were adult with age ranged from 25 to 55 years. The weight of the patients varies from 50 Kg to 96 Kg. The primary pathology was aortic stenosis. Valve size of at least one or two size higher can easily be accommodated by performing this procedure. The circumferential length of annulus can be easily be increased to 5-9 mm!

There was no operative or hospital mortality. The length of CPB and aortic cross clamping was increased as expected but with small increase in duration of mechanical ventilation. There was no other morbidity and the final length of stay was 7–10 days (same as for routine AVR). Serial follow-up transthoracic echoes have shown statistically significant improvements in left ventricular–intraventricular septum thickness (LVIVS) (16.5±1.3 mm vs. 14.3±1.7 mm), left ventricular posterior wall thickness (LVPWT) (16.7±1.4 mm vs. 14.5±1.8 mm), and in mean gradient (58±10 mmHg vs. 12±4 mmHg). The functional aortic valve orifice postoperatively was 1.4±0.3 cm². The ejection fraction (EF) and the left ventricular end-diastolic pressure (LVEDP) were unchanged.

**Discussion**

Aortic stenosis is considered severe, hence with indication for surgery, when the valve area is less than 1 cm² or,
indexing to BSA (iEOA), less than 0.6 cm²/m². This is usually associated with a mean aortic gradient above 50 mmHg. The transaortic gradients increase exponentially as the iEOA decreases to less than 0.8 cm²/m². The majority of these patients have a reasonable expected survival, as long as they remain asymptomatic. Once symptoms develop, the prognosis changes dramatically, with a 2-year survival rate <50%.

A small valve implanted in the aortic position—generally prosthetic valves sized <20-21 mm (for an adult)—tend to have much higher gradients. Factors that may predict PPM preoperatively are as follows: larger BSA, high BMI, older age, smaller prosthesis size, and valvular stenosis as the predominant lesion before the operation.

In order to avoid PPM, surgical techniques have evolved for enlargement of the small aortic root. Nicks and associates (1970) and Nunez and associates (1983) proposed a posterior approach for enlargement, either through the non-coronary sinus, across the aortic ring as far as the origin of the mitral valve or by resecting the posterior commissure (between left and non-coronary cusps) with the base of the gap formed by the fibrous origin of the anterior mitral leaflet. Another posterior enlargement technique was introduced by Manougian with the aortotomy extending into the non-coronary sinus, lateral opening of the left atrium and into the anterior leaflet of the mitral valve. Besides the posterior enlargement techniques the Konno and Rastan, anterior enlargement (through the right coronary sinus extending into the right ventricular outflow tract) has been reported in many cases. Recently, a two-directional aortic annular enlargement (combination of posterior and anterior enlargement) and a double-patch technique for posterior enlargement have been reported. Again supraannular placement of valve in tilting position has been done by some surgeons regularly for small aortic root patients. But there are only few case reports on combination of both technique i.e. patch dilatation of aortic root and supraannular tilting valve placement for small aortic root management is seen in literature.

Conclusions: Immediate and intermediate results reveal the safety of the procedure, and the significant functional and anatomical improvement of the left ventricle. Although the number of patients is small, either group of patients, male or female, small or large, seem to be the usual candidates for this procedure. It has to be seen whether this procedure is applicable in pediatric patients undergoing surgery for aortic valve diseases?

References:


Department of CTVS, NEIGRHMS
A rare cardiac surgery at NEIGRIHMS
A MISSING CHAMBER OF THE HEART CORRECTED

A. Sarma, G. C. Das, J. P. Kalita, M. K. Saikia, B. Saikia

Congenital heart disease (CHD) affects 6–8 babies in every 1000 live births. About 1 in 4 babies born with a heart defect has a critical CHD. However, single atrium (Cor triloculare biventriculare) is a very rare congenital heart disease. This defect is similar to a very large atrial septal defect. It occurs due to the lack of formation of both septum primum and secundum in the developmental process. The complete absence of the atrial septum is rare and is considered the least common variety of atrial septal defect. The term single atrium is commonly used to denote the condition characterized by: a) complete absence of the atrial septum, b) absence of any malformation of atroventricular (AV) valve and c) absence of the Interventricular (IV) communication. On the other hand, the term common atrium (CA) is used to denote the condition of complete absence of atrial septum accompanied by malformation of AV valves with or without interventricular communication. The portion on the right side of common chamber has anatomic features of right atrium and left sided portion has anatomic features of left atrium which receives blood from pulmonary vein.

Here we are highlighting a rare case with single atrium that has been corrected by the efficient NEIGRIHMS’s cardiac surgery team. The case is a thirteen years old girl presented with gradual onset of breathing difficulty, easy fatigability, and palpitations for last four years duration. On clinical examination, patient was found to be mildly cyanotic (bluish in colour) due to poor oxygenation of blood. The chest X-ray revealed cardiomegaly with increased pulmonary vascularity and pulmonary plethora. The ECG revealed left axis deviation and incomplete RBBB (right bundle branch block). The echocardiography revealed a large ASD of 44mm size with left to right shunt and mild to moderate pulmonary hypertension with intact interventricular septum. Based on the pre-operative findings, patient was planned for reconstructive surgery for closure of the defect. Nevertheless, the intra-operative finding suggested that it was a case of single atrium without any AV cushion or IV septal defect. The defect was closed with pericardial patch. The postoperative period was uneventful and the patient was discharged in stable condition. The patient has been on regular follow-up for last 2 years.

In the absence of any other cardiac abnormality, a patient with single atrium (Cor triloculare biventriculare) the right side of the atrium and the right ventricle gets dilated and hypertrophied due to the increased amount of shunting of blood through the defect from left to right atrium. Pulmonary artery and its branches are enlarged and hyperaemic lung fields usually occur due to increased pulmonary blood flow. Right bundle branch block and right atrial enlargement have been reported in ECG of such patients. It is observed that in most of the cases of ASD autosomal and sex chromosome aberrations is commonly associated with several partial and complete trisomies, including trisomy 21 (Down’s syndrome).

The uniqueness of the present case is that it is a rare variety of congenital heart disease. The hemodynamics of this malformation are quite similar to the one of a large ASD. However, complete mixing between systemic venous and oxygenated pulmonary venous blood at the atrial level is rarely found in single atrium because of the preferential flow of blood in cardiac chambers. It may reflect the fact that severe grades of cardiovascular anomalies may not have any apparent external symptoms till advanced age. Late presentation of congestive heart failure is a presenting feature if not diagnosed at appropriate time.

Hence the early detection of this type of case by echocardiography and surgical intervention is important to avoid complications of heart failure and pulmonary artery hypertension in long standing cases.
STEREOTACTIC NEUROSURGERY

Introduction
Stereotactic neurosurgery is the technique for locating targets of surgical interest within the brain relative to an external frame of reference in frame based stereotaxy or fiducial markers in the case of frameless stereotaxy. It is based on the principle that any object in space can be located by relating it to three planes intersecting at right angles to each other—the Cartesian coordinate system also called the ‘translational system’ or three-orthogonal axis system (Fig 1). The lesions thus localised can be subjected to ablation, biopsy, lesioning, injection, stimulation, implantation for brachytherapy or stereotactic radiosurgery (SRS) with utmost precision as the case may warrant. Also, lesions in brain that cannot be diagnosed accurately despite advanced computed tomography (CT) and magnetic resonance imaging (MRI) scanning can be subjected to stereotactic neurosurgical intervention to arrive at a definitive diagnosis so as to enable further management of patients appropriately. Frameless neuronavigation is also beneficial in spine surgeries.

Historical background
Stereotaxy (Greek: stero meaning three-dimensional; taxis meaning to move towards) was first described by Victor Horsley and Robert Clarke to localize brain structures in animals using a frame based on a three dimensional coordinate system in the year 1908. The first human stereotactic system named the ‘encephalotome’, (Fig 1) was demonstrated by Spiegel and Wycis in 1947 aided by the development of X-ray technology and ventriculography. This pioneering effort led to the development of other stereotactic frames and with the introduction of CT in 1973 and MRI in 1980, frame based stereotactic guidance took a firm place in the conduct of neurosurgical operations.

Types of neurosurgical stereotaxy
The present day techniques are more aptly called image-guided stereotactic surgery. They are classified into frame based and frameless stereotaxy. The procedure for the frame based system is usually performed under local anaesthesia while frameless stereotaxy is mostly carried out under general anaesthesia.

Frame-based stereotaxy: Numerous geometric systems exist on which stereotactic frame-based guidance systems have been created. Four systems have been used in the past: polar coordinate, arc radius, focal point and phantom target. The Arc-radius system (Fig 2) is the most commonly used system and serves as the basis for the Leksell frame which is more in vogue today across the globe. In this system, a frame is rigidly attached to the patient’s head with external screws over which, a semicircular arc is mounted. The arc can be manipulated for vertical and anterior-posterior adjustments to permit differential targeting by moving the center of the arc.

A CT scan or MRI of the brain is then obtained. By using the same frame for preoperative imaging and also for performing the surgery, the relationship between the two coordinate systems is known and no further transformation is needed.

Frameless stereotaxy: Here, the relationship between two different coordinate systems one related to the image (CT or MRI of brain) and the other related to the patient during surgery requires a patient-to-image registration procedure to create a mutual relationship. This is achieved by:

1) Point-pair registration: requires at least three non-colinear points (Fig 4 and Fig 5) to be defined in the coordinates of the images known as ‘fiducial points’ and can consist of natural anatomic landmarks (like nasion or tragus), skin applied markers bone implanted markers. Software is then used to establish a relationship between these coordinates and those obtained with their counterpart in surgical space.

2) Surface contour registration: Here, mapping a radiographic surface is done by touching a number of multiple random points (cloud of points) or by scanning a surface with laser registration. These surface based algorithms allow the use of imaging obtained before the intent to operate.
Indications for stereotactic neurosurgery Diagnostic:

1. To diagnose lesions: Whether infective or neoplastic by obtaining biopsy specimen
2. To grade tumors following biopsy to tailor therapy - oncological/neurosurgical/conservative management
3. Trans-oral biopsy of C2 vertebral body lesions

Lesion generation:
A. For treating movement disorders like parkinsonism and dystonia. Thalamotomy to relieve tremors and pallidotomy to treat rigidity and hypokinesia is done in Parkinson’s disease.
B. In treating chronic pain.

Deep brain stimulation:
A. For epilepsy refractory to medical treatment
B. Treating chronic pain
C. For severe depression and chronic alcoholism.

3. Evacuation of intracerebral haemorrhage
4. To localize a lesion for open craniotomy. Eg. Arterio-venous malformations (AVM) and deep tumours.
5. In stereotactic radiosurgery
6. To drain abscess and colloid cysts
7. Catheter placement for intratumoral chemotherapy, radioactive implants placement for interstitial radiation brachytherapy
8. Experimental applications:
   A. Stereotactic clipping of aneurysms
   B. Stereotactic laser surgery
   C. Central nervous system (CNS) transplantation in Parkinsonism

Complications of stereotactic biopsy

The most common complication is intracranial haemorrhage which is frequently due to rupture of vessels encountered in the trajectory of the biopsy needle. Damage to pathologically friable vessels in targeted neoplastic lesions can also be a cause of the bleed. Reported rates of haemorrhage during stereotactic biopsy are 0% to 11.5%. Most haemorrhages are minor. A less frequent complication is a new neurological deficit due to trauma to adjacent brain parenchyma resulting from direct needle injury or secondary to oedema. Other morbidities include seizures and infections.
**Stereotactic surgery in the department of neurosurgery, NEIGRIHMS, Shillong**

Under the dynamic leadership of our Director Dr A. G. Ahangar, an arc-centred stereotactic device has recently been procured from the German company Zeppelin and is at present being used to obtain biopsy (Fig. 2) from intracranial lesions causing diagnostic dilemma. In the near future, its use will be extended to drain intracerebral haemorrhages and in functional neurosurgery for deep-brain stimulation (DBS) to treat movement disorders like Parkinson’s disease and to treat patients with severe depression. We have also acquired a state-of-the-art Medtronic Neuronavigation system (Fig. 5) for frameless stereotaxy with which we have localized and excised deep seated tumours of the brain. Further, it will be used in spinal surgeries to precisely guide and resect spinal tumors and also in spinal fixation and difficult spinal instrumentation cases.

**Conclusion**

Stereotactic neurosurgery is a boon and has a tremendous impact on the diagnosis and management of neurosurgical, neurology and neuropsychiatry patients. With its unmatched precision and accuracy, diagnostic sampling and excision of brain lesions has become much simpler with the use of frame-based and frameless stereotactic neuronavigation systems respectively. Difficult spinal instrumentation is simplified and movement disorder patients are provided a ray of hope to lead a better quality of life with decreased symptomatology.

Frameless image guided and frame-based stereotactic navigation provide high yield rates of 82% to 99% in non-immunocompromised patients\(^5\). Studies have shown comparable clinical diagnostic accuracy with both methods and the complications associated with both techniques are infrequent. With modern stereotactic techniques, inaccessible lesions like those in the brainstem are made accessible for diagnostic biopsy.

Areas of ‘functional neurosurgery’ have benefited much with ‘deep brain stimulation’ (DBS) and ‘lesioning’ used to treat movement disorders, epilepsy, chronic pain, severe depression, obsessive compulsive disorders and chronic alcohol dependence. CNS transplantation in Parkinsonism and aneurysm clipping with stereotaxy is in the developmental stage. With ongoing extensive research, stereotactic neurosurgery will have many more applications in the near future.

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*Senior Resident; **Assistant Professor, Department of Neurosurgery NEIGRIHMS; email:arindom.kakati@gmail.com*
The orthopaedic department started performing Total hip replacements since 2007 and Total knee replacements since 2010. Since then, these state of the art surgeries are being performed successfully and with commendably low infection rates. We do both cemented (traditional) as well as cementless (advanced) total hip replacement and time tested fixed bearing total knee replacements. These surgeries are first of its kind in the state of Meghalaya and some of these are performed even for the very first time in the entire North-East India.

Total knee replacement

Total knee replacement (TKR) is one of the most successful surgeries of modern time in Orthopaedics. The goals of the surgery are complete pain relief and improve function of the affected joint. Deformity correction, increase bending of the knee joint due to improved range of motion, besides pain relief is also possible.

Who is benefited from Total knee replacement?

TKR is indicated in advanced osteoarthritis of knee, which can be primary or secondary to rheumatoid arthritis, gout, post-traumatic degenerative arthritis and rarely in painful but healed tubercular arthritis etc. TKR is indicated when the pain is severe enough to affect the activities of daily living (ADL) significantly requiring regular painkiller. It is usually done after the age of 50 years so that single surgery may serve the lifetime of the person. Osteoarthritis causes pain, deformity and loss of function.

The surgeons remove the diseased bone ends to replace with appropriate sized metallic components. The metallic implants are held secured to the bones by using bone cement. The implants are metal alloys and a polyethylene insert is inserted in-between the metals to reduce friction during movements of walking. Tight ligaments are released to correct any deformity. Sometimes the undersurface of the patella also needs replacement.

Many patients can walk a bit by second or third day with support from the trained physiotherapist. Most patients have an uneventful post operative period. But certain patients have a higher risk of post operative wound complications like patients with diabetes mellitus, rheumatoid arthritis, malnutrition and elderly etc.

The figure below is showing the femoral and tibial component and the polyethylene insert in between the metallic components. Patella is not shown.

All our patients had complete pain relief following knee replacement. All patients had full correction of the deformity after TKR. In most cases patient’s general condition allowed early mobilization out of bed on the second day itself with a walker support and encouragement from our experience team of physiotherapists.

Below is an X-ray film of one of our patients operated in our institute who had bilateral painful OA knee with severe varus and flexion deformity. He is 73 year old gentleman with advanced osteoarthritis hailing from Manipur. He could go back home walking with a single walking stick after stitch removal.

There was no postoperative infection is our cases till now. With the increasing awareness among the people about this surgery the number of patients is bound to increase in the time to come. However the overall high cost of the implants and accessories and disposables limit the number of beneficiaries. With increasing coverage under various health schemes like RANS and Government sponsored health insurances, more and more elderly with painful arthritis are likely to get benefits of TKR in the future.

Acknowledgement: Dr Sharat Agarwal, Dr Tashi G. Khonglah, (Faculty members, Orthopaedics) Dr Cherrymiki Tariang (SRD, orthopaedics), Physiotherapy unit, all OT staff, Nursing personnel and Anesthesia team for all their support in successfully conducting TKR cases at NEIGRIHMS.

*Associate Professor; **SRD; Department of Orthopedics and Trauma, NEIGRIHMS
Cancer of oral cavity and its management in NEIGRIHMS

Brian N Shunyu and Hanifa Akhtar

In India, 20 to 40% of all cancer arises in the head and neck region. Even though population of northeast India represents only 3.5 percent of total Indian population, but it represents the region with highest head and neck cancer. In this region cancer of oral cavity ranks highest among head and neck cancer due to varied culture, food habits, custom and high intake of betel nut with lime. People of both genders are affected with high number of patients belonging to 4th to 6th decade. Due to lack of awareness and poor socio economic status most of the patients presented in our department of Otorhinolaryngology and head and neck surgery, NEIGRIHMS in advanced stage. As oral cavity plays a crucial role in deglutition, speech and airway, so the cancer involving this site impairs the normal physiological function. And surgical management of oral cancer is a challenging issue for the surgeon due to the large soft and bone tissue defect created after excision of the growth. The greatest challenge is the need of reconstruction of the surgical defect created to maintain and rehabilitate the normal physiological and aesthetic functions. Surgery for head and neck cancer is being done in our department from 2009. The arena of reconstruction of head and neck cancers has gone through several stages with great improvement in techniques and is being done in our department by various methods. These can be done by using pectoralis major myocutaneous flaps with or without rib according to the requirement post excision. Now a day’s reconstruction is done by using microvascular free flaps like radial forearm free flap, fibula osteocutaneous flaps, anterolateral thigh flap and these flaps provide a wide range of options for reconstruction of the surgical defect. Micro vascular flaps provide the advantage of improved functional and aesthetic outcomes with reduced donor site morbidity. In contrary to the old belief regarding head and neck cancers, now patients can lead a decent life with a greater hope for normal physiological and good aesthetic functions.

*Associate Professor, **Assistant Professor, Department of ENT, NEIGRIHMS

THE HISTORY OF MEDICINE REDEFINED!
My first brush with ‘virtual dissection technology’ happened during the 60th National Conference of Anatomical Society of India (Diamond Jubilee) in December, 2012 held at Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha, which I attended, as part of the workshop on Computerized Dissection Table. I vividly remember I was kind of flabbergasted, amazed, shocked at this ‘virtual dissection’ concept, and feeling more like a doubting Thomas, I wondered how could a 3-D software literally ‘perform dissection’ and would it dare to revolutionize the conventional cadaveric dissection, our friendly cadaver who is also our best friend in the dissection lab, which we had bonded so affectionately to during our 1st MBBS days?

With all these plethora of myriad of feelings going on inside my head and armed with an inquisitive mind, I attended the workshop. At the venue, I could feel much excitement, energetic gusto and an atmosphere of skepticism being generated among the fellow anatomist delegates before the start of the workshop, as everyone discussed the merits of cadaveric dissection over virtual dissection technology, which nobody had much of an inkling of as of yet. As this Virtual Dissection Table was being introduced in Anatomy for the first time in India, we were wondering as to how could one literally do dissection in the virtual world and would it offer us ‘something new and innovative out of this world’ which the routine cadaveric dissection in this real world could not?

So, with these introspective thoughts, there we were as delegates, attending the workshop on Computerized Dissection Table, which was the star highlight of the conference, and all I could sum it up at the end of the workshop session, was that ‘IT’ was the talking and turning point of the 3 days national conference, which left everyone excited, with the feeling of having attended a futuristic 3-D show and wanting more of the table… but the price was a huge let down for everyone!

Little did I know, that a few years down the line, our very own Department of Anatomy, NEIGRIHMS, would be having the distinct honour and rare opportunity to showcase this innovative high tech 3-D dissection table in our Institute under the expertise of Dr. Ahmed Saad Mohsen, visiting foreign guest faculty, Department of Anatomy, College of Medicine, University of Baghdad, Iraq, who was on his maiden visit to India. I would like to mention here that Dr. Saad’s department have the virtual dissection table installed in their ‘Interactive Anatomy Lab’ since 2013. Our Department with kind approval from the Competent Authorities of the Institute, decided to conduct a CME cum Workshop on ‘Emerging Role of Virtual Dissection Technology in Integrated Medical Teaching’ on the 27th November, 2015 in Lecture Theatre 1, NEIGRIHMS. All this was possible only due to the
dynamic leadership and excellent support and encouragement from our Honourable Director, NEIGRIHMS, Prof. A.G Ahangar, when it comes to showcasing world class innovative technology in the field of academics. We are extremely grateful to Honourable Director Sir, for giving us this excellent opportunity to conduct this CME cum Workshop which turned out to be a successful and memorable experience for the students and all the participants, as was evident from the questionnaire feedback. Here, I would like to mention that the virtual dissection table has not yet been installed in any government institution in India as of yet, so we do hope in the coming days, that the Department of Anatomy, NEIGRIHMS, would achieve the unique and distinct honour of incorporating Virtual Dissection Table, a 3-D cutting edge, 21st century technology in Anatomy, as a supplementary teaching aid not only for our medical and nursing students but for the teachers and clinicians too.

Coming to virtual dissection technology, I would like to discuss briefly about ‘Computerized Virtual Dissection Table’ for our readers, especially for the UGs and PGs medical and nursing students. The table comes with an interactive, multi-touch screen display that incorporates technologically advanced, high resolution visualization system for anatomy education, and is now being installed in many of the world’s leading medical schools and institutions. Currently, there are two companies worldwide, which make and product the state of the art ‘Computerized Virtual Dissection Table’ for the international market. They are the ‘Anatomage’, an American product whose headquarters is located in San Jose, California in collaboration with Stanford University, and ‘Sectra’, a Swedish brand, in cooperation with Center for Medical Image Science and Visualization (CMIV), Visualization Center C, The Interactive Institute and Linköping University, Linköping, Sweden. Both the virtual dissection tables come pre-installed with 3-D gross body male and female contents; 3-D High Resolution regional anatomy and digital anatomy library with pathological and clinical cases preinstalled allowing students to not only dissect normal gross anatomy, but also experience abnormal pathologies. The data are obtained from real patient scans or cadavers, and therefore highly accurate. The table displays true human gross anatomy in real size, and is an interactive, learning and teaching, hybrid, educational 3-D tool that uses real anatomy and clinical cases to develop critical thinking in clinical training. It combines advanced radiology software and the clinical content separates the table from any other imaging system and plays a vital role in correlating anatomy with integrated medical teaching. It makes for an excellent advanced education tool as well as a technical showpiece. The table offers unique touch interactive cutting tools. With their fingers, users can rotate the virtual body and cut in any direction. After the cut, the cross section shows the details of the internal structure. Users can scroll through the plane of the last cut or cut again to further explore the anatomy. Unlike a real body, a cut can be undone to restore the body instantaneously. Such dissection capabilities set the table apart from any other simulation system. With the ability to practice dissections over and over again, the table becomes a very effective anatomy learning tool. Both the tables incorporate structures of gross anatomy which are fully annotated and segmented. With the segmentation features, each system or anatomical structure can be separated and reviewed individually. Users can explore the body by picking points of the anatomy with their finger and having the table display the name. Users can also locate a structure from lists of systems, categories, and structures. Such interactive annotations make the table a quick, efficient anatomical reference system.
It can be used directly during lectures since it connects to projectors. Instructors can create and demonstrate procedural material, making anatomy lectures more vibrant, dynamic, 3-dimensional and engaging to students. It makes for an excellent supplement but not a replacement to cadaveric studies.

The table is simple to operate. There are no recurring costs or disposal concerns like traditional cadaver labs. Likewise, costly chemicals or ventilation requirements are not required and the virtual cadavers can be used repeatedly for safe and consistent performance year after year. It can open any medical imaging data and provides high quality interactive 3-D renderings. Whether it is one’s own scan or one of the digital library cases, the computerized dissection table shows full 3-D anatomy. One can explore bone fractures, aneurysms, carcinoma, and dozens of other unique case examples, and because the anatomy is from medical imaging data, students are presented with the most accurate representation possible. Users can demonstrate the location and functions of stents, clamps, implants, and grafts. The 3-D patient scans can be cut and rotated in any direction to truly show medical devices in a new and intuitive way.

In addition to these standard features, ‘Anatomage’ also incorporates 4-D scans in their product. So, one can visualize respiration and beating heart scans with full interactivity. Users can even cut into and manipulate the scans while retaining motion capabilities. It also features surgical planning software that allows life size simulation of the surgical device interacting with the real patient image, as a new feature of medical device training.

To conclude, with the increasing scarcity of getting cadavers for dissection these days, the virtual dissection table should be incorporated as a supplementary educational 3-D tool to the conventional cadaveric dissection, as the virtual dissection does not give the real life texture and feel of the tissues in the cadaver. It should be a complement to other anatomical educational devices along with routine cadaveric dissection, with the added benefit of allowing users to easily explore hard-to-reach parts of the human body; something more of a ‘reusable cadaver’, and as an excellent, highly advanced educational tool which can be used for radiology, surgery case reviews, consultation in clinical presentations, simulated medical device training and research purposes, as well as for imparting 3-D anatomy education to medical and nursing students.

*Asstt. Prof; **Professor and HOD, Anatomy
PHARMACOVIGILANCE
FOR SAFER USE OF DRUGS

C. Sarkar* and D. Brahma**

What is Pharmacovigilance?
The World Health Organisation (WHO) defines it as the science and activities relating to the detection, evaluation, understanding and prevention of adverse reactions to drugs (ADR) or any other medicine related problems.

What is Adverse drug Reactions (ADR)?
“Any noxious change which is suspected to be due to a drug, occurs at doses normally used in man, requires treatment or decrease in dose or indicates caution in the future use of the same drug”.

How to deal with ADR?
In addition to treating individual cases, which may range from mild to severe, all ADRs should also be reported to National Pharmacovigilance centre to keep a record of such reactions. The benefit of such reporting is that any particular drug if causing large number of any type of reactions can be identified and corrective steps including withdrawal from market can be taken.

How do we report ADRs through PvPI?
If there is any suspicion that an adverse event or adverse reaction has occurred, the health care professional attending to the patient, can fill up the suspected ADR form or patient suspects that he has experienced an ADR can report to the nearest ADRs Monitoring Centres (AMCs) under Pharmacovigilance Programme of India (PvPI). The details of AMCs are given in the website of IPC i.e. www.ipc.gov.in

ADR among the Indian population is monitored by National Coordinating Centre (NCC) Ghaziabad and helps the regulatory authority of India (CDSCO) in taking decision for ‘safe use of medicines’.

Global drug monitoring centre is “Uppsala Monitoring Centre (UMC)” in Sweden.

ADR Monitoring in NEIGRIHMS
The Department of Pharmacology, NEIGRIHMS is enrolled as one of the ADR Monitoring Centres (AMC) of India under PvPI. It has been actively taking part in reporting the various ADR reports received from different Departments. From here the reports are being sent via a password protected Vigiflow software to NCC, where they are assessed for quality of data and if found valid, they are further communicated to UMC

Number of cases Reported from NEIGRIHMS:
Thirty ADRs have been reported in the year 2015

How to Report?
There is a prescribed form that can be used in making reports to AMCs which can be downloaded from the websites of IPC (www.ipc.gov.in) or CDSCO (www.cdsco.nic.in). Forms are also available in the NEIGRIHMS website www.neigrihms.gov.in

NEIGRIHMS Reporting facility:
If you are suspecting any ADR please contact the ADR monitoring Centre, NEIGRIHMS
E-mail: pharmacologydept.neigrihms@gmail.com; Telephone: 0364-2538112 - 250

A woman with nimesulide induced leukocytoclastic vasculitis and hepatitis1, diagnosed and treated at NEIGRIHMS in March 2015 is an example of adverse drug reaction that we encounter so frequently

Figure 1: Showing the malar rash in the patient with leukocytoclastic vasculitis an hepatitis
Figure 2: Showing the lesions in the upper limbs which have coalesced into large blackish deep pupole patches
Figure 3: Showing the digital infarcts of the toes of both lower limbs

Community and outreach services by NEIGRIHMS

NEIGRIHMS had participated and organized various outreach cum awareness program in different part of Khasi and Jaintia Hills of Meghalaya in the past 7 years. Independently, NEIGRIHMS organized awareness program on various important world health campaign as per WHO theme events organized by the department of Community Medicine like the occasion of World TB Day, World Health Day, World No Tobacco Day, World Diabetes Day etc. Also other departments have organized several events locally by department of Pediatrics, Ophthalmology, Cardiology relevant to their speciality. Blood Bank has also organized regular blood donation camp in different parts of Meghalaya.

NEIGRIHMS had participated actively in various ‘National Health Mission of Meghalaya’ Health Mela in the past and also with various NGOs of the state. Recently NEIGRIHMS participated in the Public Information Campaign held at Smit, from 28-30 January 2016 in a big way with 60 staff.
delivering different services during the above campaign organized by PIB, Govt. of India. NEIGRIHMS usually provide manpower to various outreach programs depending upon availability of staff and workload from respective department in which hospital function should not hamper patient services.

Department of Community Medicine is regularly participating in the Mobile Medical Unit outreach cum awareness services organized by the District Medical & Health Office, East Khasi Hills, Meghalaya. Also Rural Health Training Center at Bhoirymbong CHC was started in May 2015, in which inters were posted for a period of two months as part of internship training.
Telemedicine in NEIGRIHMS

According to the definition adopted by the World Health Organisation (WHO), telemedicine is “the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities”. By definition, telemedicine implies providing assistance in curative as well as preventive health care.

The question now arises “who is it meant for?” Anyone who needs to consult a doctor can use telemedicine. It can be a professional communication between a doctor and a patient, or between two doctors. It can be as simple as using a telephone to seek advice for an existing health problem. Junior doctors in hospitals often seek advice of seniors regarding patient management in the same hospital. But these are undocumented, informal means of telemedicine, and are not known by that name. Formal telemedicine is technology driven. The aim is to assist peripheral physicians to seek specialist opinion, or to enable home based monitoring of the patient by the healthcare institution, thereby avoiding a physical visit of the patient to the specialty centre. This saves time, money and effort for all concerned. Telemedicine can work in the following three ways:

- **Real-Time consultation**: This is the most commonly recognized use of telemedicine. The patient, primary care physician and the specialist communicate over live video. Patient-related data are also transmitted real time. Investigations like ultrasound, ECG and endoscopies can be conducted by the primary care physician, and transmitted real time to the specialist, who supervises the procedure. This method requires high bandwidths for data transmission, and an array of biomedical peripherals.
- **Store and Forward (asynchronous)**: It is used when both health providers are not available or not required at the same time. The patient related data is communicated over email or placed on a server for the specialist’s access. The specialist then follows up with his diagnosis and treatment plan at a suitable time.
- **Home Health Telemedicine**: This is used chiefly to carry out real time remote observation of the patient’s health parameters using biometric measuring devices. Communication can be carried out by videoconferencing. Such means are useful for management of chronic disorders, post-hospitalisation care and for the aged as well as for the physically handicapped in a home-based setting.

Telemedicine is also useful for providing continuing medical education to the centres covered by the hub institute. Telemedicine has the potential to shift the delivery of health care from hospitals and clinics into homes and offices.

NEIGRIHMS has been designated as the nodal centre for providing telemedicine services to the entire North-East India. This task is unenviable, given the vast expanse, inhospitable terrain and relatively sparse population, and thinned out healthcare infrastructure in the region. Patients often spend days reaching NEIGRIHMS for a consultation from other states in the region, placing immense strain on their time and resources. Telemedicine connectivity to such regions will aid immensely in reducing the stress. The aim is to ‘decentralise’ NEIGRIHMS by creating a telemedicine based outreach to far flung regions. NEIGRIHMS will reach people all over the region. NEIGRIHMS is also regional resource
centre for the National Medical College Network for e-education and e-health delivery. Migration to the National Knowledge Network (NKN) has given a much needed boost to the telemedicine activities of the institute. The institute is currently in the process of setting up three virtual classrooms, providing E-library link and E-lecture facilities to the Medical Colleges in the North-East Region in the long term with the aid of resources from the Department of Telemedicine, Nirman Bhavan, New Delhi. A telelink-enabled ambulance service equipped with diagnostic equipment has also been approved by the institute to send junior doctors into the field and work under the guidance of specialists using telemedicine link. The initial infrastructure in NEIGRIHMS was established in 2010 by Indian Space Research Organisation (ISRO), consisting of a 2mbps bandwidth capacity, based on viaSat technology.

Despite its promise, telemedicine applications have not achieved the levels of success expected even in the developed world. One reason is the resistance of patients and healthcare providers to adapt to an alternative means of service delivery. Face to face contact with a healthcare provider is considered sacrosanct. Lack of information technology literacy is another major bottleneck. Legal considerations remain another major obstacle to telemedicine acceptance. In view of the complex technology being used, there is the potential for software or hardware malfunction, potentially leading to risk to patients and the liability of healthcare providers. In order to overcome these challenges telemedicine must be regulated by internationally accepted guidelines. Legal issues need to be sorted out at the legislative level. Industry should not be allowed to dictate terms in telemedicine delivery. The promise held out by Telemedicine is too good to be allowed to fail at the obstacles presented by these issues.

The need of the hour is to enable seamless integration of telemedicine-based services with our hospital based services, rather than working in a parallel manner. This can only be done through full integration of the Hospital Information and Management Systems with Telemedicine. All patient related data should be managed electronically.

An ideal telemedicine setup would work like in the example given:

1. A patient with a malignancy presents to NEIGRIHMS. After initial workup, the treatment plan is devised, which included surgery, followed by radiotherapy.

2. Patient data (endoscopic images, radiology, histopathology etc) are transmitted to RCC Guwahati for planning and scheduling of radiotherapy. A physical visit of the patient to Guwahati is avoided.

3. Patient is discharged with advice to visit RCC Guwahati for radiotherapy. RCC is updated about the patient’s condition and changes in appointments may be made at this stage and communicated to the patient.

4. The patient will follow-up at the nearest primary health centre near the patient’s home, which has telemedicine link. The primary health physician will have full access to the patient’s treatment history on a secure website. Under instructions of the team from NEIGRIHMS. All examination images will be transmitted. All investigations will be conducted real time under guidance of NEIGRIHMS doctors, and suitable instructions given. The patient needs to visit NEIGRIHMS only if some intervention is needed.

Why is it that when someone tells you that there are over a billion stars in the universe, you believe them, but if they tell you there is wet paint somewhere, you have to touch it to make sure …
Use of technology in nursing education has significantly changed teaching strategies and will continue to challenge nurse educators in the years ahead. With the rapid expansion of electronic learning environments, the need to bridge the gap among the generations of educators and learners is critical. Teaching with technology is a learned skill, not an intuitive one; and it involves considerably more knowledge and skill than knowing how to use a computer.

Programs to prepare nursing faculty to gain the requisite knowledge and experience needed for implementing technology as a teaching strategy have been developed. A few of such programmes are:

1. Technology Fellowship Program (TFP) (Loewenberg School of Nursing, University of Memphis)
2. Teaching & Learning in Web-Based Courses Certificate Program, (the University of Indiana)
3. The Education Scholar Program, (The American Association of Colleges of Nursing)

Nursing is not alone in its struggle with the technological revolution in education. The infusion of technology into higher education is not unique to nursing. Campuses nationwide have identified the need to enhance the availability of technology and promote the development of online courses and degree programs. With the impetus to expand the use of technology, faculty must be prepared to use available resources, have access to needed support, and develop competency for using resources and support throughout the curricula.

EDUCAUSE, a nonprofit association of more than 2,000 colleges, universities, and educational organizations, was created to promote the “intelligent use” of information technology. Since its inception many universities have participated in its continuing education, national program and initiatives for mentoring, and its development of information technology (IT) professionals in higher education. A major initiative is the ongoing development of virtual communities of practice (VCOP). The VCOPs function as persistent online forums allowing individuals with common interests to explore and address shared issues or problems. The EDUCAUSE web site provides updated resources and research for educators and IT professionals.

* Lecturer, College of Nursing, NEIGRIHMS
Achievement /Highlights of College of Nursing

15 students from College of Nursing, NEIGRIHMS participated in the XXVI Student Nurses Association (SNA) Biennial National Conference, held at Bhilai, Chatisgarh on the theme “Clean and Healthy India, Nurses Concern” from 21st November -25th November 2015 under the supervision of Mr. L. Anand, Lecturer.

Ms. Esther Chongloi Chongloi, 3rd Year B.Sc Nursing student, got First Prize in a surprise Quiz conducted on the spot. More than 1500 students participated in the Medical –Surgical Nursing Quiz. She was awarded a cash prize of Rs.5000

Websites helpful for developing Electronic Technology Skills:

- The American Distance Education Consortium (ADHEC): www.adec.edu/about.html
- EDUCAUSE: www.educause.edu
- National League for Nursing (NLN): www.nln.org
- Multimedia Education Resource for Learning and Online Teaching (MERLOT): www.merlot.org

Citation: Axley, L., (August 8, 2008) “The Integration of Technology into Nursing Curricula: Supporting Faculty via the Technology Fellowship Program” OJIN: The Online Journal of Issues in Nursing Vol. 13 No. 3.
The term basic life support (BLS) refers to maintaining an airway and supporting breathing and the circulation. It is the foundation for saving lives following cardiac arrest. According to the American Heart Association guidelines Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR) which includes initial assessment, chest compression, airway maintenance, expired air ventilation (rescue breathing; mouth-to-mouth ventilation). BLS implies that no equipment is used. The purpose of BLS is to maintain adequate circulation and ventilation until a means can be obtained to reverse the underlying cause of the arrest.

History
The earliest reference to mouth-to-mouth ventilation is considered to be in the Bible, when God created Adam, and when the prophet Elisha revived an apparently dead child. The Egyptian goddess Isis revives her husband Osiris! In 1500 it was not uncommon to use a fireplace bellows to expel hot air and smoke. The method of the bellows (Bellows) resuscitation placed in the mouth of the victim, is a method that is used for nearly 300 years.

Phillipus von Hohenheim, wrote about the use of a bellows to resuscitate people 1493-1541. In 1700, a new method of resuscitation was used. This “new” procedure involved blowing smoke into the rectum snuff (fumigation) of the victim was in cardiac arrest. This practice was abandoned in 1811. The inverse PCR method of resuscitation, used from 3,500 BC to 1770, was originally practiced in Egypt almost 3,500 years ago in the 16th century when cases of drowning became increasingly common this method became popular again in Europe.

This method involves hanging the victim by the feet, with chest pressure to help the inspiration. In 1740 The Paris Academy of Sciences officially recommended mouth-to-mouth resuscitation from drowning. In 1773 Dr. William Hawes became very well known because of its relentless effort to draw public attention to perform the resuscitation of apparently dead, mainly drowning. He convinced the Parliament to establish schools where medical students learn the principles of resuscitation. In 1778, he was appointed Secretary of Royal Humane Society.

Dr Charles Kite made the first scientific study of sudden death in clinical trials: “Recovery of apparent death” in 1778 he described a 3 year old child who was taken for dead after falling from a window was revived after resuscitation was performed by an electrostatic generator power with a Leyden jar condenser. The Russian method of resuscitation, described in 1803, was to cover a patient with snow awaiting the return of spontaneous circulation.

Even though many efforts were being made it was not until the 1950s that mouth-to-mouth ventilation was rediscovered and became accepted universally as the method of choice. Closed chest cardiac massage was first described in 1878 by Boehm [4] and used successfully in a few cases of cardiac arrest over the next 10 years. After that, however, open chest massage became the standard management for cardiac arrest until 1960, when the classic article on closed chest massage by Kouwenhoven, Jude and Knickerbocker was published. [5]As this coincided with the rebirth of mouth-to-mouth ventilation, 1960 could be considered the year in which modern cardiopulmonary resuscitation was born.

In 1992 the European Resuscitation Council issued guidelines particularly appropriate to the emergency care facilities available within Europe. The Resuscitation Council (UK) adopted these guidelines In 1993 the Basic Life Support Group of the International Liaison Committee on Resuscitation (ILCOR) was formed to review existing BLS guidelines from around the world, and to produce a document, or “advisory statement”, that could be used as a resource by organizations wishing to develop their own guidelines.

Does BLS work?
Approximately 70% of all cases of cardiac arrest occur out of hospital,
often in the victim’s home. Early intervention by a bystander calling for the emergency services and initiating CPR can materially improve eventual outcome. The sooner that BLS can be instituted the better is the outcome.

**Chain of survival**

Despite important advances in prevention, SCA (sudden cardiac arrest) continues to be a leading cause of death in many parts of the world. Sudden cardiac arrest has many etiologies (ie, cardiac or non-cardiac causes), circumstances (eg, witnessed or un-witnessed), and settings (eg, out-of-hospital or in-hospital). This heterogeneity suggests that a single approach to resuscitation is not practical, but a core set of actions provides a universal strategy for achieving successful resuscitation.

These actions are termed the links in the “Chain of Survival.” For adults they include:

- Immediate recognition of cardiac arrest and activation of the emergency response system
- Early CPR that emphasizes chest compressions
- Rapid defibrillation if indicated
- Effective advanced life support
- Integrated post–cardiac arrest care.

When these links are implemented in an effective way, survival rates can approach 50% following witnessed out-of-hospital ventricular fibrillation (VF) arrest.

**Adult BLS Sequence**

The steps of BLS consist of a series of sequential assessments and actions, which are illustrated in the new simplified BLS algorithm.

**Sequence of actions**

1. Ensure safety of rescuer and victim
2. Immediate Recognition and Activation of the Emergency Response System: If a lone rescuer finds an unresponsive adult (ie, no movement or response to stimulation) or witnesses an adult who suddenly collapses, after ensuring that the scene is safe, the rescuer should check for a response by tapping the victim on the shoulder and shouting at the victim. The trained or untrained bystander should—at a minimum—activate the community emergency response system (eg, call 911 (In India 108) or if in an institution with an emergency response system, call that facility’s emergency response number)

3. Pulse Check: Studies have shown that both lay rescuers and healthcare providers have difficulty detecting a pulse.[12–21] Healthcare providers also may take too long to check for a pulse.

   - The lay rescuer should not check for a pulse and should assume that cardiac arrest is present if an adult suddenly collapses or an unresponsive victim is not breathing normally.

   - The healthcare provider should take no more than 10 seconds to check for a pulse and, if the rescuer does not definitely feel a pulse within that time period, the rescuer should start chest compressions (Class IIA, LOE C).

**Early CPR**

Chest Compressions: Effective chest compressions are essential for providing blood flow during CPR so all patients in cardiac arrest should receive chest compressions (Class I, LOE B).

Chest compressions consist of forceful rhythmic applications of pressure over the lower half of the sternum.

- To provide effective chest compressions, push hard and push fast at a rate of at least 100 compressions per minute (Class IIa, LOE B) with a compression depth of at least 2 inches/5 cm

   - Rescuers should allow complete recoil of the chest after each compression, to allow the heart to fill completely before the next compression (Class IIa, LOE B).

   - Rescuers should attempt to minimize the frequency and duration of interruptions in compressions to maximize the number of compressions delivered per minute (Class IIA, LOE B). A compression-ventilation ratio of 30:2 is recommended (Class IIA, LOE B).

**Rescue Breaths:** A change in the 2010 AHA Guidelines for CPR and ECC is to recommend the initiation of compressions before ventilations. Beginning CPR with 30 compressions rather than 2 ventilations leads to a shorter delay to first compression (Class IIb, LOE C).

Once chest compressions have been started, a trained rescuer should deliver rescue breaths by mouth-to-mouth or bag-mask to provide oxygenation and ventilation, as follows:
• Deliver each rescue breath over 1 second (Class IIa, LOE C).
• Give a sufficient tidal volume to produce visible chest rise (Class IIa, LOE C).
• Use a compression to ventilation ratio of 30 chest compressions to 2 ventilations.

Care should be taken that delays in, and interruptions of, chest compressions should be minimized throughout the entire resuscitation.

Early Defibrillation with an AED: After activating the emergency response system the lone rescuer should next retrieve an AED (if nearby and easily accessible) and then return to the victim to attach and use the AED. The rescuer should then provide high-quality CPR.

High quality CPR possesses the following important characteristics:
• Compressions should begin within ten seconds of determination of cardiac arrest.
• The rate of compression should be 100-120 per minute.
• The depth of compression should be at least 2.5” for adults, approximately 2” for children from age one to adolescence, and 1 ½” (cm) for infants. The depth of compression should be 1/3 the AP chest diameter for children and infants.
• There should be complete recoil of the chest after each compression.
• Interruptions in chest compression should be minimized. When giving shocks, the interval between the last compression and the shock should be kept to less than 10 seconds, as should the interval between the shock and following compression.

When 2 or more rescuers are present, one rescuer should begin chest compressions while a second rescuer activates the emergency response system and gets the AED (or a manual defibrillator in most hospitals) (Class IIa, LOE C). The AED should be used as rapidly as possible and both rescuers should provide CPR with chest compressions and ventilations.

Defibrillation Sequence
• Turn the AED on.
• Follow the AED prompts.
• Resume chest compressions immediately after the shock (minimize interruptions).

The American Heart Association promoted the 2010 adult BLS guidelines for lay rescuers and healthcare providers.

Key changes and continued points of emphasis from the 2005 BLS Guidelines include the following:
• Immediate recognition of SCA (Sudden Cardiac Arrest) based on assessing unresponsiveness and absence of normal breathing (ie, the victim is not breathing or only gasping)
• “Look, Listen, and Feel” removed from the BLS algorithm
• Encouraging Hands-Only (chest compression only) CPR (ie, continuous chest compression over the middle of the chest) for the untrained lay-rescuer
• Sequence change to chest compressions before rescue breaths (CAB rather than ABC)
• Health care providers continue effective chest compressions/CPR until return of spontaneous circulation (ROSC) or termination of resuscitative efforts
• Increased focus on methods to ensure that high-quality CPR (compressions of adequate rate and depth, allowing full chest recoil between compressions, minimizing interruptions in chest compressions and avoiding excessive ventilation) is performed
• Continued deemphasis on pulse check for health care providers

The 2010 AHA Guidelines for CPR and ECC deemphasize the pulse check as a mechanism to identify cardiac arrest. Studies have shown that both laypersons and healthcare providers have difficulty detecting a pulse. For this reason pulse check was deleted from training for lay rescuers several years ago, and is deemphasized in training for healthcare providers. The lay rescuer should assume that cardiac arrest is present and should begin CPR if an adult suddenly collapses or an unresponsive victim is not breathing or not breathing normally (ie, only gasping).

• A simplified adult BLS algorithm is introduced with the revised traditional algorithm
• Recommendation of a simultaneous, choreographed approach for chest compressions, airway management, rescue breathing, rhythm detection, and shocks (if appropriate) by an integrated team of highly-trained rescuers in appropriate settings.

Rescuer Specific CPR Strategies:
Untrained Lay Rescuer: If a bystander is not trained in CPR, then the bystander should provide Hands-Only (chest compression only) CPR, with an emphasis on “push hard and fast,” or follow the directions of the emergency medical dispatcher. The rescuer should continue Hands-Only CPR until an AED arrives and is ready for use or healthcare providers take over care of the victim (Class IIa, LOE B).

Trained Lay Rescuer: All lay rescuers should, at a minimum, provide chest compressions for victims of cardiac arrest. In addition, if the trained lay
rescuer is able to perform rescue. The rescuer should continue CPR until an AED arrives and is ready for use or EMS providers take over care of the victim (Class I, LOE B).

Healthcare Provider: Healthcare providers trained in BLS should provide chest compressions and rescue breaths for cardiac arrest victims (Class IIa, LOE B). This should be performed in cycles of 30 compressions to 2 ventilations until an advanced airway is placed; then continuous chest compressions with ventilations at a rate of 1 breath every 6 to 8 seconds (8 to 10 ventilations per minute) should be performed. Care should be taken to minimize interruptions in chest compressions when placing, or ventilating with, an advanced airway. In addition, excessive ventilation should be avoided.

Changes in 2015 guidelines

Summary of the changes since the 2010 Guidelines

• The ERC Guidelines 2015 highlight the critical importance of the interactions between the emergency medical dispatcher, the bystander who provides CPR and the timely deployment of an AED. An effective, co-ordinated community response that draws these elements together is key to improving survival from out-of-hospital cardiac arrest.

• The emergency medical dispatcher plays an important role in the early diagnosis of cardiac arrest, the provision of dispatcher-assisted CPR (also known as telephone CPR), and the location and dispatch of an AED.

• The bystander who is trained and able should assess the collapsed victim rapidly to determine if the victim is unresponsive and not breathing normally and then immediately alert the emergency services.

• The victim who is unresponsive and not breathing normally is in cardiac arrest and requires CPR. Bystanders and emergency medical dispatchers should be suspicious of cardiac arrest in any patient presenting with seizures and should carefully assess whether the victim is breathing normally.

• CPR providers should perform chest compressions for all victims in cardiac arrest. CPR providers trained and able to perform rescue breaths should combine chest compressions and rescue breaths. Our confidence in the equivalence between chest compression-only and standard CPR is not sufficient to change current practice.

• High-quality CPR remains essential to improving outcomes. The guidelines on compression depth and rate have not changed. CPR providers should ensure chest compressions of adequate depth (at least 5 cm but no more than 6 cm) with a rate of 100–120 compressions/min. After each compression allow the chest to recoil completely and minimise interruptions in compressions. When providing rescue breaths/ventilations spend approximately 1 s inflating the chest with sufficient volume to ensure the chest rises visibly. The ratio of chest compressions to ventilations remains 30:2. Do not interrupt chest compressions for more than 10 s to provide ventilations.

• Defibrillation within 3-5 min of collapse can produce survival rates as high as 50-70%. Early defibrillation can be achieved through CPR providers using public access and on-site AEDs. Public access AED programmes should be actively implemented in public places that have a high density of citizens.

• The adult CPR sequence can be used safely in children who are unresponsive and not breathing normally. Chest compression depths in children should be at least one third of the depth of the chest (for infants that is 4 cm, for children 5 cm).

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*PGT, **Additional Professor, Department of Anaesthesiology & Critical Care, NEIGRIHMS; contact - drmdyunus@hotmail.com

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I never laugh at people who are less fortunate than me They’re too hard to find

★★★

When everyone is against you, it means you are absolutely wrong or absolutely right

★★★
The 21st century is the age of superfast communication and hi-tech gadgets. And with the increasing need to stay connected to each other, mobile phones have become a way of life rather than a luxury. Youngsters and even children today are so engrossed in their addiction to mobile phones and personal listening devices (PLDs) like mp3 players and i-pods, that mobile phones are now termed as ‘cigarettes of the 21st century’. According to the Highlights on Telecom Subscription Data, Telecom Regulatory Authority of India (TRAI) states that India has the fastest growing telecommunication network in the world with an estimated number of mobile phone users at 930.20 million as of September 2014. As a matter of fact, the minimum age of mobile phone users has drastically fallen in recent times, with even school goers being exposed to such devices. However, very little is known about the potential threats posed by these devices to our health, thus making it a matter of widespread concern in the masses. There are two probable ways by which prolonged use of mobile phones may adversely affect health—the emission of electromagnetic radiation causing thermal effects, mainly in the form of heating when the device is held close to the ears, or because of constant noise in case of prolonged use of the device. Studies suggest that mobile phones emit a pulsed high frequency electromagnetic field, which may penetrate the skull and are known to alter distinct aspects of the electrical response of the brain to acoustic stimulus. There have been several instances when otological complaints like tinnitus, earache, vertigo, blocked sensation in the ear and hearing impairment presented in cases with an associated higher use of mobile phones and PLDs. Various studies claim to have found an association between prolonged use of these devices and hearing impairment, whereas there are several others who contradict this belief. However, a cross-sectional study conducted at the North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Meghalaya, India, with the aim to establish an association between duration of use of PLDs and hearing impairment in young adults conducted on 50 undergraduate students by using pure tone audiometry as the modality to determine an increased hearing threshold in subjects using mobile phones for a longer duration as compared to those using these devices for comparatively shorter periods ended in the conclusion that despite presence of a higher auditory threshold in some of the subjects in the former group as compared to the latter, there is no significant association between the duration of use of such devices and hearing loss.

Despite all the potential harms cell phones can cause to our health, its essentiality in our lives cannot be overlooked. Hence, it would be wise to take adequate precautions to reduce electromagnetic exposure. Duration of direct exposure to cell phones and PLDs should be limited to a safe period of 1 to 2 hours per day. Volume of the device should be kept low. Cell phones should be preferably used on speakers whenever possible. It is necessary to keep a regular check on the electromagnetic waves emitted by the device. Also, parents should avoid exposing their children to such devices at an early age and instead encourage healthier practices to keep them occupied.

Thus all said and done, it is a matter of concern that very little is known about the effects of mobile phones and personal listening devices on the auditory system, and thus this calls for more detailed large-scale studies involving advanced electro-diagnostic tests so as to define safety norms regarding use of such devices.
North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS) is an Autonomous Postgraduate Medical Institute established by Government of India in 1987, the first in northeast India, and the third in the country after AIIMS, New Delhi and PGI, Chandigarh. Today it is one of the leading medical institutes of the country catering to the people of the northeast region of the country, providing high-end super-specialty healthcare services in various disciplines, besides undertaking graduate, postgraduate and postdoctoral medical courses and quality research.

Since its establishment in 1987 under the Meghalaya Registration of Societies Act (1983), NEIGRIHMS has made a long journey during these three decades to reach its present stature. Here are a few of the milestones in its development.

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>August 1998</td>
<td>Interim hospital facility of NEIGRIHMS was commissioned at a temporary site in Lawmali, Polo Hills, Shillong.</td>
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<tr>
<td>January 2000</td>
<td>Declared as an Institute of National Importance by the then Hon’ble Prime Minister of India, Shri Atal Behari Vajpayee</td>
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<tr>
<td>August 2000</td>
<td>The foundation stone of NEIGRIHMS was laid at its permanent site at Mawdiangdung, Shillong by the then Hon’ble Minister of Health and Family Welfare, Government of India, Dr. C.P. Thakur.</td>
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<tr>
<td>July 2006</td>
<td>B.Sc. Nursing degree course, affiliated to North Eastern Hill University was started at NEIGRIHMS with an initial intake of 50 students</td>
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<tr>
<td>January 2007</td>
<td>NEIGRIHMS was declared as a &quot;Centre of Excellence&quot; by the Parliament. NEIGRIHMS is the only medical institute in the country to have this honour.</td>
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<tr>
<td>October 2007</td>
<td>Central Library has been shifted to the main building as a three storied complex, which presently has over 20,000 books, 105 print journals and 3 e-resource data bases, with a seating capacity of more than 200.</td>
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<tr>
<td>August 2008</td>
<td>MBBS degree course, affiliated to North Eastern Hill University was started at NEIGRIHMS with an initial intake of 50 students</td>
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<tr>
<td>2008</td>
<td>Immunohistochemistry started in the Department of Pathology</td>
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<tr>
<td>May 2009</td>
<td>Postgraduate degree (MD &amp; MS) courses started in specialties of 4 disciplines of Anaesthesiology, Pathology, Microbiology and Obstetrics &amp; Gynaecology affiliated to North Eastern Hill University.</td>
</tr>
<tr>
<td>March 2010</td>
<td>NEIGRIHMS was dedicated to the Nation by the Hon’ble Chairperson of UPA, Smti. Sonia Gandhi, after its permanent campus was commissioned</td>
</tr>
<tr>
<td>May 2012</td>
<td>The first batch of Postgraduate students in Anaesthesiology, Pathology, Microbiology and Obstetrics &amp; Gynaecology passed the final university examination; and the courses were recognised by MCI</td>
</tr>
<tr>
<td>May 2012</td>
<td>The Institute adopts its Official Logo after obtaining approval from the Governing Council.</td>
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<tr>
<td>August 2012</td>
<td>Super-Speciality (DM course) in Cardiology (affiliated to North Eastern Hill University) was started</td>
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<tr>
<td>2012</td>
<td>Immunofluorescence facility started in the Department of Pathology.</td>
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<tr>
<td>January 2013</td>
<td>First MBBS batch Graduated</td>
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<tr>
<td>March 2013</td>
<td>• Departments of Neurosurgery and Psychiatry started functioning</td>
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<tr>
<td></td>
<td>• MBBS Course was recognised by MCI</td>
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<td></td>
<td>• Government agreed /sanctioned the new projects for construction of Regional Cancer Centre, Medical College and Nursing College along with their respective hostels.</td>
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<tr>
<td></td>
<td>• Assessment based Merit Promotion Scheme (APS) at par with AIIMS, New Delhi and PGIMER, Chandigarh has been implemented for promotion of faculty members of NEIGRIHMS</td>
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The Science of Deduction

*Sherlock Holmes and Dr Watson go on a camping trip. After a good dinner and a bottle of wine, they retire for the night, and go to sleep.*

*Some hours later, Holmes wakes up and nudges his faithful friend, “Watson, look up at the sky and tell me what you see.”*

*“I see millions and millions of stars, Holmes,” replies Watson.*

*“And what do you deduce from that?”*

*Watson ponders for a minute. “Well, astronomically, it tells me that there are millions of galaxies and potentially billions of planets. Astrologically, I observe that Saturn is in Leo. Meteorologically, I suspect that we will have a beautiful day tomorrow. Theologically, I can see that God is all powerful, and that we are a small and insignificant part of the universe.*

*“But what does it tell you, Holmes?”*

*Holmes is silent for a moment.*

*“Watson,’ he says, “Someone has stolen our tent!”*
Case 1: A 24-year-old female presenting with a history of multiple joint pains, hair loss, and a photosensitive rash in the face. Name the rash.

Case 2: An elderly male with a history of chronic liver disease, under treatment that includes pantoprazole, Ursodeoxycholic acid, spironolactone, and multi vitamins. After some time, he developed painful enlargement of both breasts for which one of the medicines was stopped, leading to significant improvement of the condition. Identify the drug.

Case 3: A young woman presented with a history of multiple joint pains, swelling, and joint tenderness. Investigation revealed hyperuricemia, bilateral renal calculi; liver biopsy was advised which showed swollen hepatocytes with granular red cytoplasmic granules and microvesicular with macrovesicular steatosis. Multiple glycogenated nuclei were also seen. There was mild sprinkling of chronic inflammatory cells in the portal area and subtly by the lobules. Periodic acid–Schiff (PAS) staining for glycogen was positive. What is the diagnosis?

Case 4: An 11-month-old boy presented with matted hair locks of 4 months duration. The parents gave a history of thick, greasy scaling on the child’s scalp that had shed spontaneously 4 months ago. At this time, his hair had begun to develop curled locks. His hair was never combed or cut but was regularly oiled and washed with plain water without soap. Potassium hydroxide mount for fungal hyphae was negative. Cutting of the hair was advised. Based on clinical findings, what is the diagnosis?

Case 5: A young homosexual male had ulcers on the genital region. Examination of hands is shown in the above picture. Identify the condition and organism involved?

Case 6: A young male had painful multiple vesicular eruption over the cervical region that didn’t cross the midline. Identify the condition?

**Quiz Answers:**
2. Spironolactone.
4. Plica neuropathica.
5. Secondary syphilis and organism is Treponema pallidum.
6. Herpes Zoster.

**Instructions:**
1. Buritiy malir rash in syphilis.
2. Lupus erythematosus.
3. Cytogenen sterse disease type 1.
4. Plica neuropathica.
5. Secondary syphilis and organism is Treponema pallidum.
6. Herpes Zoster.