UMBILIKAL

Providing Food For Thought...!

VOL – I , ISSUE - II

A Joint Venture of

Biomedical Association of Students for Excellence (BASE)

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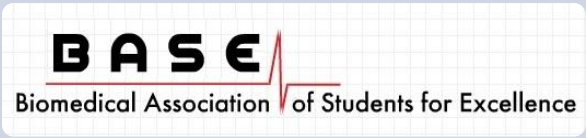

UMBILIKAL (Providing Food For Thought)

(VOL - I, ISSUE – II)

JULY - 2012

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"EXPERIENCE IS THE CHILD OF THOUGHT, & THOUGHT IS THE CHILD OF ACTION"

- Benjamin Disraeli

In This Issue . . .

Editorial

Surely all of us – no matter what field we have ended up as adults – recall our first flashes of understanding about the scientific process. They may have happened in school classroom or in lonely observation of the natural world. Many progresses of modern-day research and development have marked impact on society's values, especially those relating to healthcare. These values relate with special importance to biomedical engineers as biomedical engineers develop and design devices, maintain and advise on the use of modern healthcare equipments. Health equipment is one of the major contributors, along with drug and other devices, to the rapid progress of healthcare in the last 50 years. In spite of its obvious importance, equipment often has not received proper attention in terms of planning, incorporation and management particularly in developing countries. Studied conducted by the World Health Organization (WHO) have shown that 25% to 50% of all health equipment that exists in developing countries cannot be used for one reason or another, seriously impeding efforts to improve the delivery of health services to their people. UMBILIKAL (Providing Food for Thought) is an attempt to connect all healthcare providers from developing countries particularly from Pakistan to improve healthcare performance through knowledge sharing allied to medical technology and innovation.

Hope you will enjoy the new style of the UMBILIKAL (Providing Food for Thought) e-Magazine! Thanks to all who contributed to this edition – it is an honor! All your favorite articles and information are here. Look for new feature in upcoming issues.

Mirza Abdul Aleem Baig
(Editor in Chief)
UMBLIKAL e-Magazine

Patron Message

It is a matter of great pleasure and honor for me that second issue of UMBILIKAL is on our screens. It took hard working but by the grace of Almighty Allah we succeed in continuing this chain and here is this magazine ready on your screen. In fact it is result of team's hard work.

I always expect from my contributors that they will bestow shine to our hopes and will share hand in hand with us to make this magazine a complete blessing for Biomedical Sciences Students community.

Well, it is quite difficult to express one's feeling merely through words when the whole idea was one's own brainchild. That is what my relationship exists with UMBILIKAL. I will not go conservatively to express my hard work and labor for turning this initiative into a reality but I would like to say working in this team was extraordinarily great. Being a team leader you have to face and cope up with the number of different problems and that is where your actual potential is utilized. I bow my head before Almighty Allah who enable us to achieve this. I want to thank and express my gratitude to all who coordinated us and guided us at each step of this venture.

Last but not least here I end-up with a quote of 'Paulo-Coelho' on which I have always believed:

"When you want to achieve something, the entire universe conspires in helping you to achieve it."

- **Paulo Coelho**

Sincerely Yours,

Asad Ali Siyal
(Chairman)
Biomedical Association of Students for Excellence (BASE)
PAKISTAN

Patron Message

People from Life Science, Biotechnology and Biomedical Engineering always crib about inability of their respective branch to provide them good jobs. In this context inability of students is more prominently observed as compared to the inability of the colleges and companies who hire and train them. Long-time back when our best friend electronics was developing people who were talking about electricity and electronics were called the useless fellows and they were never given the respect at their time. But now we regard each n every of them as father of one or another innovation as we have realized that over the period of time that how important it was to sustain research in such trying conditions. But now we have become too hasty to get success and become great in very short duration of time and that too with minimum of hard work. Software Engineering field lures the people to join with them giving high payouts. It acts like a magnet and attracts away all the iron nails for whom Money is more important than the work they do, that is fair enough but when you take up some other field then you should not crib about your alma mater or Biomedical Engineering which got you that job because that leads to a wrong impression in the eyes of the students are coming forward to take up this branch of engineering as they don't think it will be worth to take this branch as the people prior to them or senior hadn't done well.

Thus with the due course of time when people realize that they have been fooled by some early payouts and their pay is going to stagnate they try to move out but are not able to move out and are struck in the nested loop i.e. loop inside the loop.

Biomedical Engineering has already become the backbone of all the medical applications around the world; it is just the developing countries where the Healthcare itself hasn't developed much due to the risk involved in the healthcare research. As far as I see, Biomedical Engineering offers a golden opportunity to the new students in terms of healthcare development as well as maintenance of the existing healthcare inside the country.

Kush Tripathi
(Chairman)
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INTRODUCTION

An inherent and rhythmical electrical activity is the force behind the hearts continuous beating. Certain cardiac muscles cells repeatedly fire spontaneous impulses that they trigger heart contraction. During embryonic development, a small fraction (about 1%) of the cardiac muscle fibers becomes auto rhythmic (self-excitable), that is, able to repeatedly and rhythmically generate impulses. This auto rhythmic fibers act as a natural pacemaker.

A pacemaker is an electronic device used to treat patients who have symptoms caused by abnormally slow heartbeat. A pacemaker is capable of keeping track of the patient's heartbeats. Practical cardiac pacing starting in the 1950's, which was external to the body. This device was followed by the implantable pacemaker developed in 1958 karolinska institute in Solna by Elmquist and surgically implanted by Senning in Sweden. This work was followed by Greatbatch and chardack in United States, first in an animal and then in a patient two years later. Although this approach was less than ideal, it did provide the necessary expectations and technical and scientific developments by research bioengineers and industry.

DIAGNOSTIC INDICATIONS

The most common reason that someone might need a pacemaker is having a heartbeat that is too slow (Bradycardia). This occurs when one or more of the chambers of the heart become blocked, usually takes place in the right atrium ("Sick Sinus Syndrome") or the right ventricle ("heart block"). Another condition is narrowing of the valves called Stenosis. A pacemaker can relive the symptoms of sick sinus syndrome and heart block and restore normal heart rate. Less commonly, pacemakers may also be used to terminate an abnormally rapid heart rate (Tachycardia).

DEVICE DESIGN

The wide range of electro-physiologic disorders treated with pacemakers requires devices with various capabilities and settings. Generic classification codes have been developed to ease the identifications of the different pacemakers.

FIVE-POSITION GENERIC PACEMAKER CODES

A series of clinical questions exist. The first question asks, where the device to sense the hearts rhythm, in the ventricle, the most common location, in the atrium, or in both. The second question asks in which chamber or chambers the pacemaker to pace. This location is usually the ventricle, but can be the atrium or both. The third question relates to, how the devise to work when it encounters natural heartbeat. It can either be inhibited, or it can be triggered to enhance the natural beat.

The answers to these three questions provide the first three codes given to any pacemaker. This code is an international code developed by the Inter-Society Commission on Heart Disease (ICHD). It was later expanded to a five-code system by the North American Society of pacing and Electrophysiology (NASPE) and the British Pacing and Electrophysiology Group (BPEG). The first version of the NASPE/BPEG codes allowed for programmability and communication.

TABLE-1 NASPE/BPEG GENERIC PACEMAKER CODES

I	II	III	IV	V
Chamber sensed	Chamber paced	Response	Rate Modulation	Multisite Pacing
O-none A-atrium V-ventricle D-dual(A+V)	O-none A-atrium V-ventricle D-dual(A+V)	O-none I-inhibited T-Triggered	O-none R-rate modulation	O-none A-atrium V-ventricle D-dual(A+v)

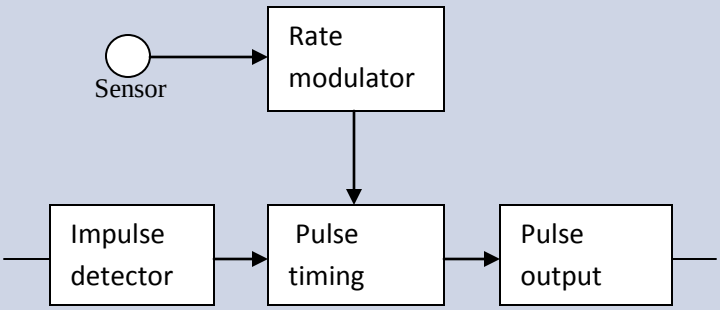
VVI pacemakers, which are in common use, allow the pacemaker to sense natural heartbeats in the ventricle (V), and, if they are absent, to pace in the ventricle (V), ensuring that the pacemaker inhibits (I) its output if a natural beat is detected. DDD pacemaker can sense in the atrium, ventricle, or both (D) with inhibiting and triggering (D). With programming techniques, the pacemakers mode cam be changed after the device is implanted, and so a manufacturer may list a very large number of modes for some pacemakers

The codes in table-1 also show the fourth and fifth letters. The fourth tells the user if the device has an internal function for modulating its pacing rate, known as a rate responsive(R) mode. If no code is quoted in the fourth position, it can be assumed that the device is not rate responsive. The fifth letter is for multisite pacing and used if at least two atrial pacing sites or two ventricular pacing sites exist.

GENERATORS

Modern pacemaker's generator is small, thin, and weighs only 20-30g. Generator and battery technology allows pacemakers to last approximately 5-9 years in the body. Power technology has steadily improved since the first mercury-zinc batteries of the 1960's, with modifications in other generator components further increasing endurance. Now a day's pacemaker utilizes Lithium-iodine batteries.

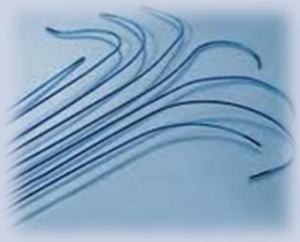
Figure-1 Block diagram of a complete pulse generator



Electrical leads

The pacing leads consist of five components: the connector, insulating material, Electrodes and fixation mechanism. Leads should possess a small diameter, be flexible enough to place but durable enough to resist wear should possess favorable power consumption, anchor in place to prevent migration and good biocompatibility.

The pacing leads can be subdivided into a number of groups based on the area of placement and method of stimulation. Leads can be placed either on the epicardium (external surface) of the heart or onto the endocardium (internal surface) of the right heart atrium or ventricle.



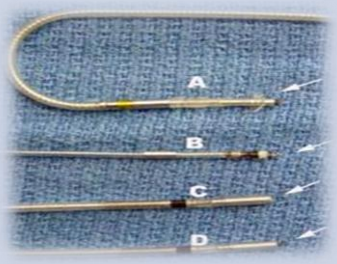
The depolarization impulses can be sent through either a unipolar or bipolar leads. The generator shell acts as the anode of the resulting circuit. Modern leads use a bipolar design where the cathode and anode are both in the lead and spaced a short distance apart. The original bipolar leads were fabricated with two conducting wires alongside one another, enclosed in a large silicon rubber sheath.

TYPES OF BIOMATERIAL USED

A number of materials have been used for insulation and pacing leads, which include polyethylene, polysiloxanes, polyurethane

and poly (ethylene co-tetraflouroethylene)(ETFE). Titanium and its alloys.

LEAD FIXATION MECHANISM



To prevent migration, leads tips are fitted with either passive or active fixation mechanisms. Passive devices use hooks or tins to secure the line into place, while active fixation methods are screw like tip to burrow the lead into the heart tissue

TYPE OF SENSORS USED

A very large number of sensors, control techniques have been proposed to provide optimal rate responses in those patients unable to generate an adequate heart rate increase. Because no single sensor can perfectly reply the sinus node, later dual sensor systems have been introduced to accommodate for particular deficiencies in either sensor. The most popular sensor i.e., Blended sensor which is combination of Accelerometer and ventilation sensors are mechanical devices that measure vibrations. Sensors mostly made up of piezoelectric material which consists of coupling mass. As the body move or accelerate, the coupling mass moves and this mechanical stress is applied to the surrounding piezoelectric material. This material emits electrical signals approximately in proportion to the vibration transmitted through the pacemaker from patient's working muscle.

ROLL OF PROGRAMMER

The programmer allows the physician to adjust pacemaker settings to meet the particular needs of the patient. Modern microcomputer based systems use radio-frequency waves or magnetic fields to communicate with EP device noninvasively. The programmer can retrieve device setting and performance date, including failure performance or analyze an existing problem using CODE TECHNOLOGY. A recent review divided the most common programmable features into six categories including pacing mode selection, energy output and characteristics, electrical sensitivity rate limits, refractory periods and their duration, and the various rate-adaptive features and functions.

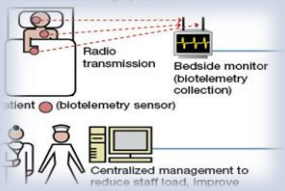
WORKING OF PACEMAKER

The generator is where the information to regulate the heartbeat are stored. The leads are wires that go from the generator through a large vein to the heart, where the wires are anchored. The leads send the electrical impulses to the heart to tell it to beat. A pacemaker can usually sense if the heartbeat is above a certain level; at which point it will automatically turn OFF. Likewise, the pacemaker can sense when the heartbeat slows down too much, and will automatically turn back ON in order to start pacing again(say 70-80 bpm). The pacemaker can sense the abnormally fast heart rate and take control of it by speeding up first. Then, it can be slowed down to normal.

EXTERNAL PACING

The role of temporary external pacemaker must not be forgotten. These devices provide essential support after some cardiac surgery and after some myocardial infractions, allowing time for the recovery of the heart's own pacing function. External pacemakers can be used for initial stabilization of a patient. External cardiac pacing is typically performed by placing two pacing pads on the chest wall. Usually one pad is placed on the upper portion of the sternum, while the other is placed along the left axilla, near the bottom of the rib cage. When an electrical impulse goes from one pad to the other, it will travel through the tissues between them and stimulate the cardiac muscles.

TELEMETRY FUNCTION WITH CODING



For telemetry functions and programming, the pacemaker needs to be able to communicate with an external device, usually with coded signals using electromagnetic transmission between the

pacemaker and a programming unit. These devices use standard techniques, with only the coding being specific to pacemakers. Most countries have national registration schemes, which enable information on specific patients to be obtained, for example, a patient develops a problem while away from home. If, however, this information is not available, the device type can be recognized by a unique-radio opaque code that can be obtained by X-ray.

COMPLICATIONS

Complication associated with electrophysiology devices can be divided into those that are a consequence of device failure or malfunction. In general, complications are reported to occur at a greater rate with those physicians who implant pacemakers less frequently.

- ***These are possible complications during the procedure.***

i. Bleeding
ii. Infection
iii. Dropping lunge(uncommon)
iv. Puncture of heart leading to bleeding around the heart(rare)
v. Hemothorax(blood in chest cavity)
vi. Phemothorax(air in chest cavity)
vii. Generator malfunction: Although there are a number of problems that could necessitate generator replacement, the most common reason is a depleted battery at the end of its service life. A relatively common emergent indication for generator replacement is electrical component failure
viii. Lead insulation failure: A recent survey of cardiac pacing revealed that the most common reason for lead replacement was insulation failure
ix. Units suffer from electrical interference due to Electro-magnetic interference (EMI), which may cause pace-maker malfunction.
x. Most home appliances (e.g., microwave, CB radios), cellular phones, welding equipment and equipment with powerful magnets.

Preventive measures for complications

We can reduce some types of complication to some extent.

- Bio Plastics or nonmagnetic materials can prefer for housing/coating on generator.
- Leads should be made of nonmagnetic metallic alloys (Titanium and titanium alloy, gold alloys etc.).
- Elastomers like poly-co-tetrafloroethylene (ETFE), latex rubber, biostable poly (urethanes), etc., can be preferred as insulating material.
- Avoid electromagnetic interference (EMI) which is caused by devices like microwave, CB radio, cellular phones, etc,.
- One should pay attention to the surroundings and the device that may interfere; one should always carry identification with you that indicates you have a pacemaker.

e-Health Grid System for Post Operative Patient using 3G Mobile Networks

By:

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UMBILIKAL

E-Magazine

The beginning of 21st century has become the innovative century for biological sciences, particularly in biochemistry and healthcare sciences. The advent of fast communication system and advance robotics system has enabled making web-portal system for dedicated healthcare system. The huge knowledge of health monitoring system has developed from hospital information system (HIS), Clinical Information System (CIS), Laboratory Information System (LIS) and Management Information System (MIS) for patient's safety and security at hospital or home. The aim is to design and simulate such a complex system to management and interaction among various patient and experts through web-portal system. Here it is expected that vial sign parameters would be collected by using 3G mobile networks of post operative patients.

Since, the eHealth services through 3G mobile networks offering medical support at a distance for monitoring patient's post operative care (e.g. vital signs) via ambulance services nationally and globally. The technique is to take some parameters and to simulate it by considering networks at various levels of integration. At first, it will be simulated at LAN (hospital levels), then it will be extended to Metropolitan Cities (WAN) at country levels. At large it will be extended to the Global levels (GAN).

The proposed research model is based on web-portal eHealth Grid System, which proposes that knowledge should be focused to the patient and the localized environment for the reason of security and care of the patient. For this reason e-grid web-portal system would be designed for the purpose of static and dynamic knowledge of the patient and will be stored in the knowledge based system (KBS). The collective knowledge via eHealth Grid System would be based on interactive system between the experts and the patients.

The model is depicted in Fig.(a) & (b) represents the condition of patient that mainly depends on clinical Laboratory tests such as, Blood CP, Urine DR, Kidney Function Test, Liver Function Test, X-rays and Pathological Reports. In patient monitoring system the pre-monitoring and post monitoring test are compared to examine the physical condition of the patient. In every hospital, there are testing laboratories to share data for local and remote experts in concerned area of patient's health. When a large number of patients are involved, we can make a Knowledge Management and Grid Monitoring System to analyze multiple parameters of patients for distribution for particular expert available for consultation from many concerned doctor in

the similar area. As illustrates from figures that how a patient can be monitored remotely from diagnostic laboratory or micro laboratory for reports or information from the patients and experts in case of emergency through tele-diagnostic devices.

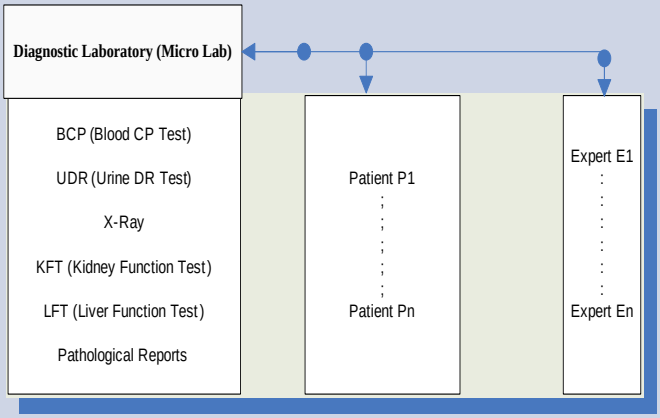

Figure 1. Remote Diagnosis of Patient through Micro Lab

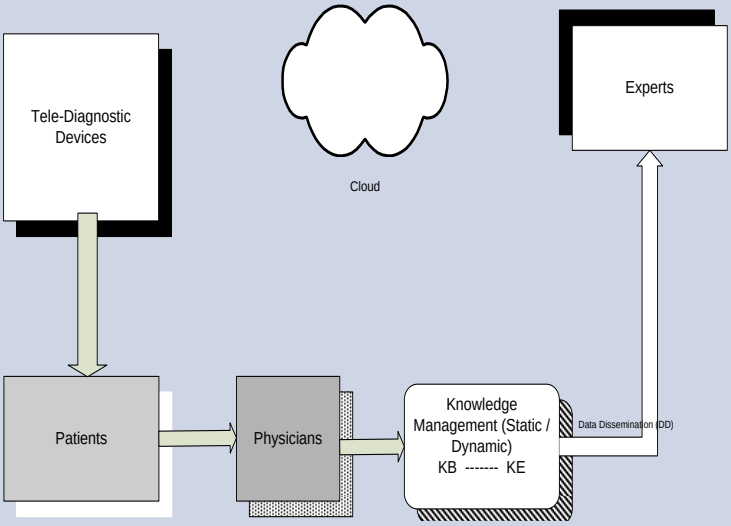

Figure 2. Web-Portal e-Health Grid Patient Monitoring System

Author brief profile:

Engr. N.P. CHOWDHRY is an Assistant Professor in the dept. of Biomedical Engineering at Mehran University of Engineering & Technology, Jamshoro. He did his Masters in the field of Telemedicine & e-Health Systems from London, United Kingdom.

He has participated in advanced learning workshop in the field of IT at AS-ICTP, Trieste, Italy in the capacity of junior Guest Scientist in the year (2001-2002). Mr. Chowdhry was awarded an honor of the co-chair of the international conference theme 'eHealth, Telemedicine & Health ICT' of Med-e-Tel-2006, the technical session on 'e-Health in developing countries' at the Luxembourg. He has published his papers in the proceedings of the Med-e-Tel conferences (2006-2009). He is an author of more than a dozen research papers, including research articles, book chapters and review of chapters at national & international levels. Mr. Chowdhry was selected by SUNPA Yunnan Image Tel. Co. Kunming under the Ministry of Science & Technology, PR., China, to attend an international workshop on "Telemedicine Network Design, Development & Applications" in the year (2009-10). Currently, he is nominated for 'Star Laureate Award 2011' by the selection committee South Asia Publications (SAP) to be held on 14th August, 2012. Mr. Chowdhry is the Professional member of an International Society for Telemedicine & eHealth (ISfTeH) Geneva, Member, IAENG (UK), Member, IACSIT (Sing). His areas of research interests are Medical Engineering: includes eHealth, telehealth & telemedicine, Mobile Health, Biomedical Imaging, Biosensors, Vital Sign Monitoring & e-health Grid Networks.

UMBILIKAL E-Magazine

Medical education is education related to the practice of being a medical practitioner, either the initial training to become a doctor (i.e., medical school and internship), additional training thereafter (e.g., residency and fellowship), or Physician Assistant education. Medical education and training varies considerably across the world. Various teaching methodologies have been utilized in medical education, which is an active area of educational research.

The economic crisis in the last few years has reduced the role of government in social development and transferred it to the private sector. These changes have affected medical education too. Lack of resources has created a situation where outdated equipment and educational methods produce medical graduates with outdated knowledge, skills and attitudes. Students' are understandably frustrated when they discover that their long journey through medical school has yielded knowledge that does not match the requirements of their profession. Failure to structure criterion for proper selection of students and societal needs has resulted in indiscriminate admittance of thousands of students, causing many dropouts in the first two years and, eventually, ill-prepared medical doctors. Clearly, medical teachers are feeling the pressure to adapt to changes in the health care system while maintaining excellence in education. The question in their minds is; how can we change our medical education program to meet the society's need?

This paper

suggests certain changes which could be considered as the first step at the beginning of a long journey.

Characteristics of the kind of doctor society needs: Medical education has to train future doctors in a way that they are capable of managing the health problems of those who seek their services in a competent and humane manner. Today's medical graduates not only need adequate knowledge but also the skill to use it. But this era of rapid advancement of IT, may declare today's knowledge be obsolete tomorrow. Therefore students must also be equipped with skills for self directed lifelong learning. Doctors need the competence to analyze and interpret clinical findings and translate them into a rational diagnostic and management plan. Additionally, education should be aligned with the needs of society. Doctors need to adapt their medical practice to new epidemiological or demographic patterns. In summary, medical students must acquire an integrated, community-oriented body of knowledge, and the ability to update, extend and improve that knowledge and use it effectively in the care of their patients. The need has arisen for doctors to be able to: assess and improve the quality of care by responding to

patients comprehensive health needs and provide integrated preventive, curative and rehabilitative services; make optimal use of new technology, bearing in mind ethical and financial considerations; promote healthy lifestyles by means of communication skills and empowerment of individuals for their own health protection; reconcile individual and community health requirements, striking a balance between patients' expectations and society's needs; work efficiently in teams within the health sector and socio-economic sectors affecting health.

Assessment of quality in medical education:

The role of quality assurance in medical education is to ensure that future physicians attain adequate standards of education and professional training. This requires evaluation based on a clear understanding of the goals of university-based professional education and the context of its application. Quality assurance must strike a balance between ideals and institutional reality. Patrick explains different approaches for evaluation of our teaching programs with the help of internal and external evaluators. Institutional/Internal quality evaluation starts by setting goals and aims and periodical self-evaluation monitor the attainment of goals, followed, if necessary, by modifications. External evaluation is managed by a governmental office (universities) and has three components: accreditation/affiliation, control and improvement. There is need of improving ongoing/future research activities whereas; improving research standards is another challenge in medical education. High quality relevant research needs more interdisciplinary collaboration.

Conclusion:

The improvement of medical education should be a priority task for all of us. Medical education is ultimately aimed at improving clinical practice and the competent management of health problems. To be competent is to use clinical tools and economic resources rationally. The speed of social changes demands skills at adapting our tools and resources to new situations and societal needs. Thus medical education is a practical and dynamic discipline that needs constant review and research to become and remain a useful tool to society.


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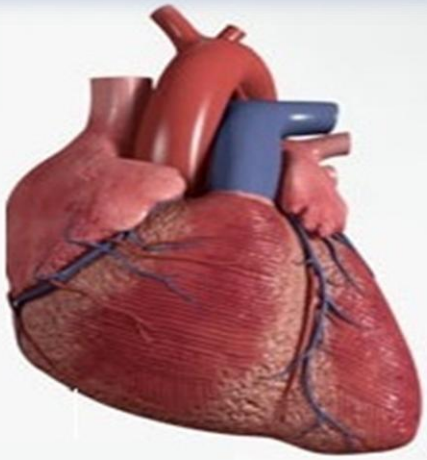
CARDIAC CARE OPTIONS

By: SYED WAHAB SHAH
Peshawar,
PAKISTAN



UMBILIKAL E-Magazine

Today in the era of high technology due to the availability of the facilities like communication, long distance education, travel have made a person available to everyone around the clock. Due to all these social changes life become so fast and hectic so due to the overload of work and mental stress the health of the particular is affected and his mental interaction is several times increased.
Such activities have caused disease like hypertension, diabetics in high percentage. In the presence of such circumstances the heart that is a pumping organ has decrease its efficiency and shows more disorders then the normal function. The rate of heart diseases has increased and has caused a great number of people to suffer from their normal functions. The health care societies have established several means to treat these disorders. a series of options has been created to overcome the situation but to tackle the situation we have to go ahead of our conventional process in order to get a more reliable and healthy end.
a series of options are available to make the pumping operations active in which the heart transplant is the key one, but the other approaching to it are also available and these are briefed as Ventricular assist devices.

The VAD can be used as a bridge-to-transplant, which means it can help a patient survive until a donor heart becomes available for transplant. This option may be appropriate for people whose medical therapy has failed and who are hospitalized with end-stage systolic heart failure. The VAD also used as destination therapy, The VAD provides effective homo dynamic support, maintains or improves other organ function, improves exercise performance and enables participation in cardiac rehabilitation. The continuous flow pump produces a continuous, non pulsatile flow of blood through the circulatory system using only one moving part
The first Left Ventricular Assist Device (LVAD) system was created at Baylor College of Medicine in Houston in 1962
The first heart assist device was approved by the FDA in 1994; major advantage of a VAD is that the patient keeps the natural heart. The AbioCor is approved for use in severe bi ventricular end-stage heart disease patients who are not eligible for heart transplant and have no other viable treatment options. As of April 2011, 14 patients have been implanted with the AbioCor, with one patient living for 512 days with the AbioCor a vad boosts the native heart by taking up over 50% of its function. [44] Additionally, the VAD can help patients on the wait list for a heart transplant. In a young person, this device could delay the need for a transplant by 10–15 years, or even allow the heart to recover, in which case the VAD can be removed.

Pacemaker
The generator is essentially a tiny computer (along with a battery and other electronic components), housed in a hermetically sealed titanium container... The generator is placed, beneath the collar bone. The leads are threaded through a nearby vein, advanced to the appropriate position within the heart, and their ends are plugged into the generator. The implantation procedure usually takes 30 minutes to an hour.
Once implanted, the pacemaker works by monitoring the heart's electrical activity, and deciding whether and when to "pace." If your heart rate becomes too slow, the device paces by transmitting a tiny electrical signal to the heart muscle, causing it to contract. Pacing can be done from the right atrium, the right ventricle, or

both. The pacemaker decides on a beat-to-beat basis whether it needs to pace, and if so, in which chambers it should pace. Its intelligent pacing makes sure that an appropriate heart rate is always present, and that the work of the cardiac chambers is always coordinated.

The idea of the shock is the same as the "shock with paddles" that you may have seen on television. However, because the device is attached to the heart with wires, the shock is much less powerful than what you may imagine.

in the presence of the above procedures the transplantation is also available with condition these are briefed as.

Heart transplant

Less suitable for a heart transplant, if they suffer from other circulatory conditions unrelated to the heart. The conditions in a patient increase the chances of complications: Kidney, lung, or liver Insulin-dependent diabetes with other organ dysfunction Life-threatening diseases unrelated to heart failure vascular disease of the neck and leg arteries.

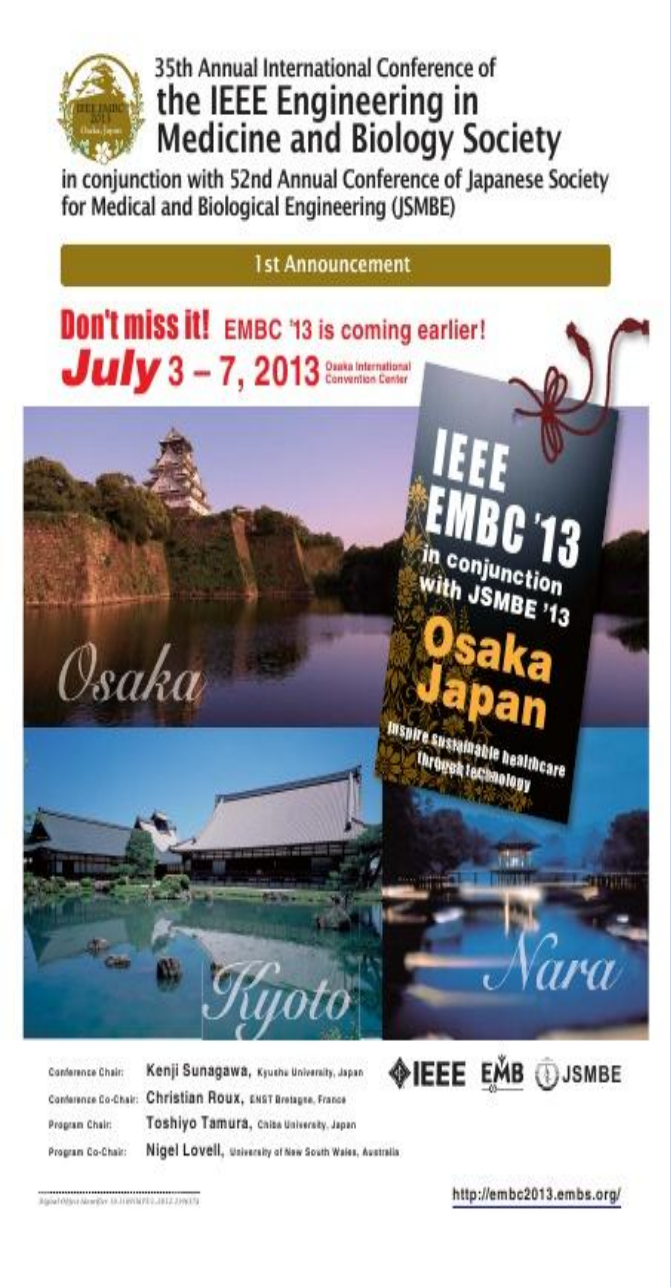
High pulmonary vascular resistance

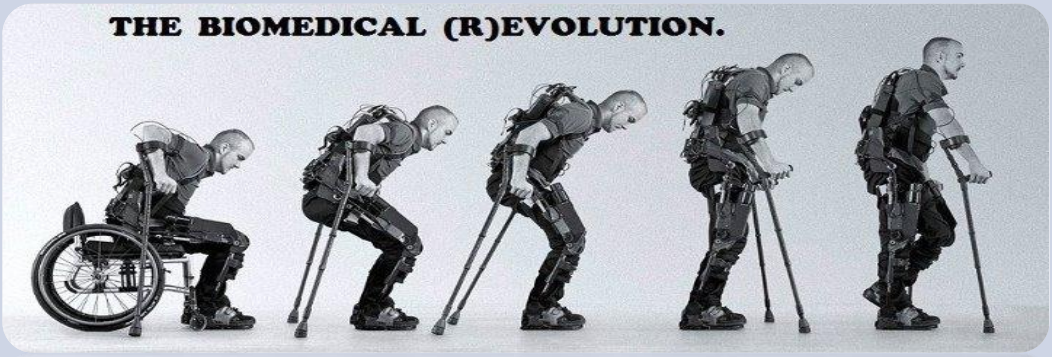
Recent thromboembolism

Age over 60 years (some variation between centers)

Substance abuse (which increases the chance of lung disease) the patient must also undergo emotional, psychological, and physical tests to verify mental health and ability to make good use of a new heart. The patient is also given immunosuppressant medication so that their immune system does not reject the new heart.

Concluding the discussions an example of complete heart translate is also present which provides us the gate way of the option of implantation. Doctors from the Texas Heart Institute have successfully replaced a patient's heart with a device that keeps the blood flowing, thereby allowing him to live without a detectable heartbeat or even a pulse. The turbine-like device, which are simple whirling rotors, developed by the doctors does not beat like a heart, rather provides a 'continuous flow' like a garden hose. Craig Lewis was a 55-year- old, dying from amyloidosis, which causes a build-up of abnormal proteins. The proteins clog the organs so much that they stop working...





HOW WE ARE connected ??

By: SADAF AHMED
Advance Educational Institute & Research Center (AEIRC)
PAKISTAN

UMBILIKAL
E-Magazine

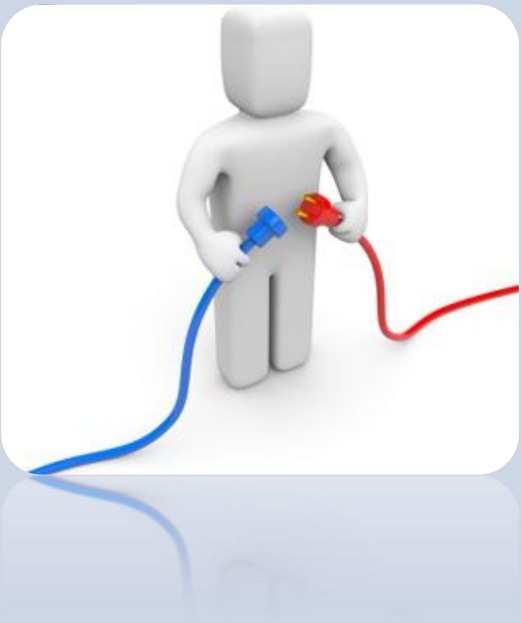
We are living in Bio-century, an epoch where the biological sciences can exceed computing in its impact on human survival. As expertise in life sciences modernize anthropology, psychology, medicine and virtual health science with the increase in the demand of better healthcare. New investigation tools aided by rapid technology advances will exponentially raised our understanding of diseases, and subsequent development of new and more effective therapeutic interventions. The Life Sciences engineering is ambitious loaded with creation and utilization of knowledge and has a prominent role in not only providing challenging careers in progressive research and development, ultra-modern built-up and health services. Innovation for me is simply any new idea that works!!! And new discoveries in this regard can help to develop our health and quality of life. Such knowledge-

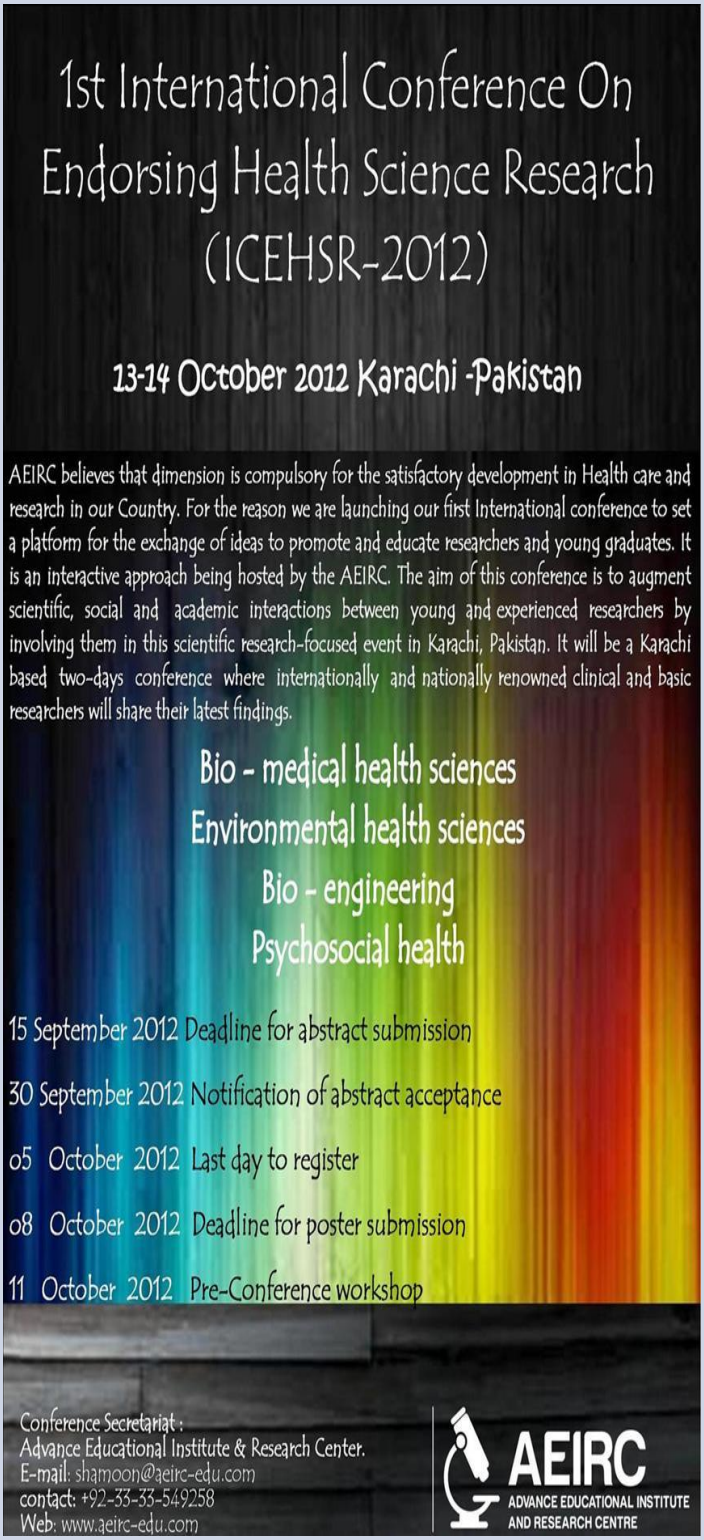
intensive revolution robust our purpose of renovate the Pakistan economy into a knowledge-based one. Research experience can help improve scholar proficiency in penetrating literature and critically analyze ideas to explore. That can positively influence the research culture that can lead to discover potential career and can also alleviate the standards of research in our side of the world. We believe that the research infrastructure wants wide-ranging development, and the insufficient funding for research must be improved, so that there will be a gain of research culture in which young scientists can participate. Dimension is compulsory but not satisfactory for excellence development in Health care for a common man in our Country. For the reason that Advance Educational Institute & Research Center (AEIRC) is trying to develop excellence, exchange of ideas of the association between dimension and development that is vital for ensuring any suitable system design and efficiency. We are interested in improving the level of communication in health care sector and research intellects among Pakistani population, to positively influence the research culture by promoting the frequency of

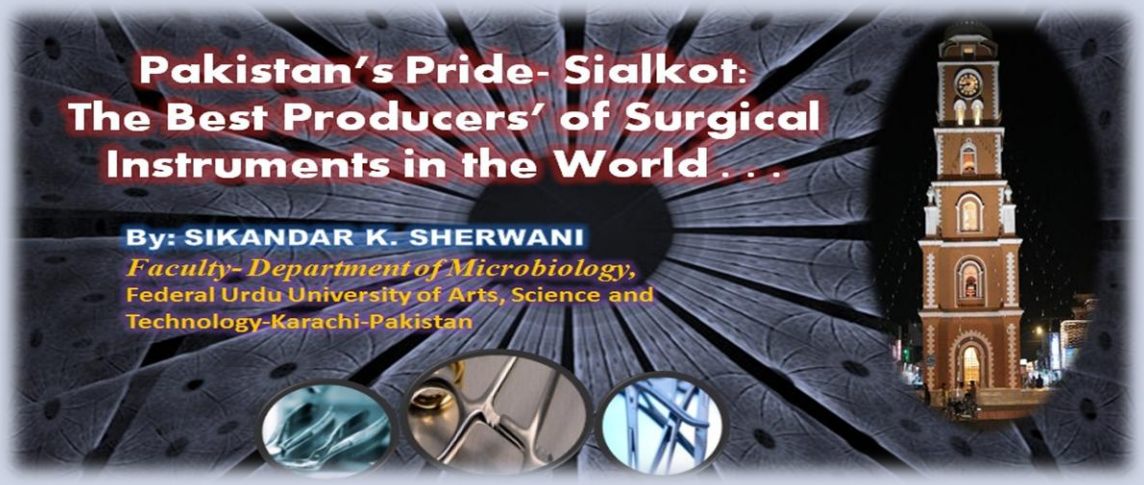
information sharing and spreading awareness about health care matters and to educate the population even from non-science backgrounds about the working and significance of the health care system with relevant latest researches. In fact, research shows that this type of regular infrastructure characteristically acquiesce a good deal of prolific, scalable, and innovative ideas.

"Innovation that works is a disciplined process. The real boundary is to not think of it as a creative exercise, but to think about it as being disciplined in using the right methods."

- **Larry** Keeley







UMBILIKAL

E-Magazine

Every country, if we look around keenly is blessed with multitude talents and great blessings of Allah in terms of resources. Infact, these potentialities today for any nation is truly the great source of survivability of nation the competitive era of world. As far as, the specialization of any country in terms of industrial development and prosperity is concerned, one of the unique features of Pakistan, undoubtedly; unmatched and unparalled, the Great hub and exporter of Surgical tools. Surgical tools no doubt, an indispensible requirement in health in health sector; no doubt part and parcel of medical community. A surgical instrument is a tool to perform special procedure by medical community during operation or surgery. Over time, many different kinds of surgical instruments and tools have been invented. Some surgical instruments are designed for general use in surgery, while others are designed for a specific procedure or surgery. Medical instruments, medical tools and surgical tools are helpful in performing various activities (cutting, dissecting, grasping, holding, retracting, or suturing) needed for investigation, diagnosis, prevention, monitoring, treatment, replacement or modification of the anatomy, or alleviation of disease and injury. Most surgical instruments are made from stainless steel. Other metals and alloys, including titanium and vitallium, are also used.

Today, the entire business is regulated Surgical Instruments Manufacturers Association of Pakistan(SIMAP) .One can expect the great potential of this industry as currently the registered members around 3000 industries working in different capacity, according to latest statistics. If we further dissect, there are more than 2000 low, medium and high caliber industries are engaged in

production level and besides this, more than 1000 traders are working in the export sector. In addition to this, more than 5000,000 workers are grossly engaged in this lucrative industry, thus industry also serve to provide employment to the number of workers in the country. As for as production is concerned, Pakistani Surgical Industry represents manufacturers and exporters of Surgical Instruments, Electro Medical Instruments, Body External Fixation Systems and Implants, Micro Surgery Instruments, Cardiovascular Instruments, Endoscopic and Gynecological Instruments, ENT Instruments, Respiratory Aid

Instruments, Orthopediac Instruments, Holloware, Anesthesia Products, Hospital Furniture, Dental Instruments, Veterinary Instruments, Personal Beauty care Items and Beauty Saloon instruments. Commonly used surgical instruments include spinal retractors, root elevators, rake retractors, dressing forceps, cast knives, capsulotomy scissors, towel clamps, etc..

Pakistan is one of top ranking countries whose surgical commodities are being supplied globally. Internationally, the largest exporter in the world is Pakistan, the second largest is China and the third one is India. Pakistan has a proud being the only country in the world that supplies surgical goods in 140 countries. Even, the cost of the current export till 2011 of these goods is more than U$ 260 million. Nonetheless, many countries in the world have now jumped into the business of manufacturing surgical instruments, but the question of quality always tops of the list, as their quality standards cannot be matched with standards required by the exporters. Frankly, it is hard to satisfy the needs of consumers where the richness of products available in terms of cost and quality and shelf life. As producing surgical goods is one of the specializations of Pakistan, the past decade record clearly shows that Pakistan has always been so conscious and so always takes care of good standard and no compromise at any cost is the utmost motive of this industry in Pakistan. Keep Pakistan's name high in the world, the credit goes to Sialkok-a city of Poet of East- and many scholarly people, located in the province of Punjab, is a hub of producing surgical instruments. Silakot has become so popular globally for the production of medical products, most notably surgical instruments. Over the years there has been an increasing number of manufacturers from this region leading to a higher degree of competition as well as higher quality performance. Chronically, tracing history, so was an ancient business here. Yet, the first in true sense, the surgical industry was originated in Pakistan in 1940s in the city of Sailkot, later by investment and sensible steps the business flourished and expanded. We really wish Pakistan to expand more and more business and keep maintain the quality of these goods.

BASE - Initiatives

BIOMEDICALS Forever!

BASE – Science For Awareness

UMBILIKAL – Providing food for thought...

BASE Volunteers

BASE Bioimedical Association of Students for Excellence

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SAVING THE MOTHER- CHILD RELATIONSHIP

By: FATIMA SAIMA AHMED (SSUET), PAKISTAN

UMBILIKAL
E-Magazine

Relationships are the binding forces that hold people together. We're born alone, we die alone, but what keeps holding us from the latter to the first, are the relationships. Of the many kinds of relationships, the one that's gets crowned as the queen of relationships; the one with the strongest 'binding force' is the mother-child relationship.

It is the one that is superior above all the rest, a relationship that starts with the words; pain, labor, and risk but enveloped with bearing, patient, enduring and deep, profound, and unfathomable love.

Millions of women die every year during childbirth. Millions of neonates affected, billions of complication cases, and billions of long term consequences. According to the World health organization

"Every minute, at least one woman dies from complications related to pregnancy or childbirth – that means 529 000 women a year. In addition, for every woman who dies in childbirth, around 20 more suffer injury, infection or disease – approximately 10 million women each year."

Many mothers suffer from bad healthcare, wrong diagnostics of various conditions or unsafe and dangerous labor conditions. The UNO has placed maternal health as Millennium Development goal (MDG) #5, and countries like the United States, Britain, and many countries are working hard to develop their standards.

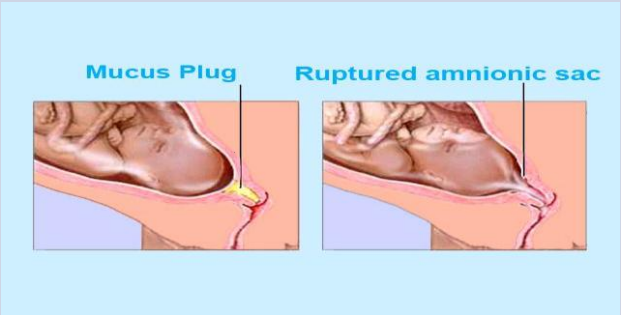
According to the USAID, Countries like Malaysia, Thailand and Sri Lanka have reduced their maternal mortality rate by about 50% by improving their health conditions, providing better maternal health and spreading awareness amongst the people.

Unfortunately, presently Pakistan has amongst the worst healthcare systems in the world after Africa, where only 1 in 6203 people have access to a trained lady health worker, and only 1 in 2501 to a good nurse.

According to the reported statistics, 3 women die every hour and 375 000 women suffer every year from pregnancy related complications. Nevertheless, More than 80% (SOGP)# of women are delivered at home, providing many unreported cases from the rural areas. It has been identified that One of the major reasons and causes of mortality, morbidity, and complications is the Premature Rupture of membrane (PROM) followed by wrong diagnosis.

PPROM

Rupture Of Membrane Refers To The Rupturing Of The Amniotic Sac And Chorion A Few Hours Before The Onset Of Labor. It occurs at a maximum of about 24 hours before labor, accompanied by the contractions.



Preterm ROM Is Referred To The Condition When It Occurs Before 37 Weeks Gestation.

PROM Is A Very Major Obstero- Gynecological Problem Clinicians' Face.

Premature Rupture Of Membrane Occurs In

1 Out Of 10 Pregnant Women.

Constitutes A Major Factor Of Pre And Post Natal Complications

In USA At least 30% Of Pregnant Women Are Treated For ROM

Timely and correct diagnosis of premature Rupture of membrane is very essential, as it can lead to long term consequences, infertility, complications, abnormalities, and even mortality if incorrectly diagnosed. According to the Australian and New Zealand journal of Gynecology

"In 47% Of The Cases, Clinicians Were Uncertain

Of The Diagnosis Of Prom Based On Clinical Assessment Alone"

WRONG DIAGNOSIS

FALSE POSITIVE

A false Positive When There Is Really No Rupture May Result In Wrong Drug Administration And Procedures.

May Lead To Necessity Of Generating Artificial Labor, And In turn A Premature Baby.

According to reports Prematurity is cause of 85% of Neonatal mortality and morbidity

Increased Risks, And Requirement Of Neonatal ICU And Constant Check On Mothers Health.

Unwarranted medications could cause lifelong complications.

FALSE NEGATIVE

Wrong Negative refers to the condition when there is a rupture of amniotic sac membrane, but is not diagnosed correctly. This case can cause a lot of complications! According to a recent research of 2010, clinical diagnosis gives 12.5% false negative results!

And also that 20% of females have subtle and intermittent leakage

If Timely Diagnosis, Attention, And Hospitalization Is Not Given, It Could Result In Child And Mother MORTALITY AND MORBIDITY,

Infections,

Fetal Distress,

Prolapse Of Umbilical Cord,

Postpartum Endemetritis,

Or Abruptio Placenta.

It was really upsetting that of the procedures present so far, 5 of them to be precise; none was accurate enough (except for the Amino dye Infusion technique which is invasive, expensive and can cause bleeding and rupture in itself), and there was a great chance of wrong diagnosis.

There was a great need for such a tool to be devised that would be sensitive, accurate, specific, safe, and which could diagnose correctly in the shortest possible time. (Absence of timely attention may also lead to infertility in women.)

AMNISURE INTERNATIONAL

To overcome this issue AmniSure International of the Qiagen Group devised a new method, a scientific tool with 99% accuracy that can save from the consequences of a wrong diagnosis; and in turn, save lives. Some main features of the test are:

FDA CLEARED simple, easy and reliable test

Rapid detection of fetal membrane rupture (max 10 minutes)

Non Invasive

Detects Miniscule amounts of Amniotic fluid in Vaginal Discharge

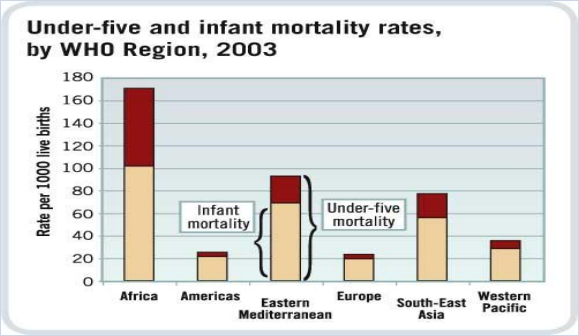
Very easy to use and operate; test could be performed by nurses and lady health workers as well.

No need for speculum examination, additional reagents or equipment

Results can be evaluated Visually

All these features of the AmniSure have made it a widely used consumer tool in the USA, and many other countries. Many researches have been conducted on it*, and found to be as accurate and reliable as the Amino Dye Infusion technique[13] but completely safe and harmless.

Pakistan plans to launch it in the near future, under the brand of the ALLMED Group, and we look forward to having better, improved maternal conditions, particularly in the case of PROM and PPROM.



Just like many other countries, it is high time Pakistan works for the betterment of the healthcare system in the country. It time we work to spread awareness, to train and increase the number of lady health workers and improve our maternal health conditions and reduce infant mortality ~ because we're not just talking about one person, we're not just dealing with 2 lives, but with the future of our country, and the future of our world…

Let's work to improve the conditions to the best we can!

SAY NO TO WRONG DIAGNOSIS!!! SAY YES TO HAPPY MOTHERS, SAY YES TO HEALTHY BABIES!!...

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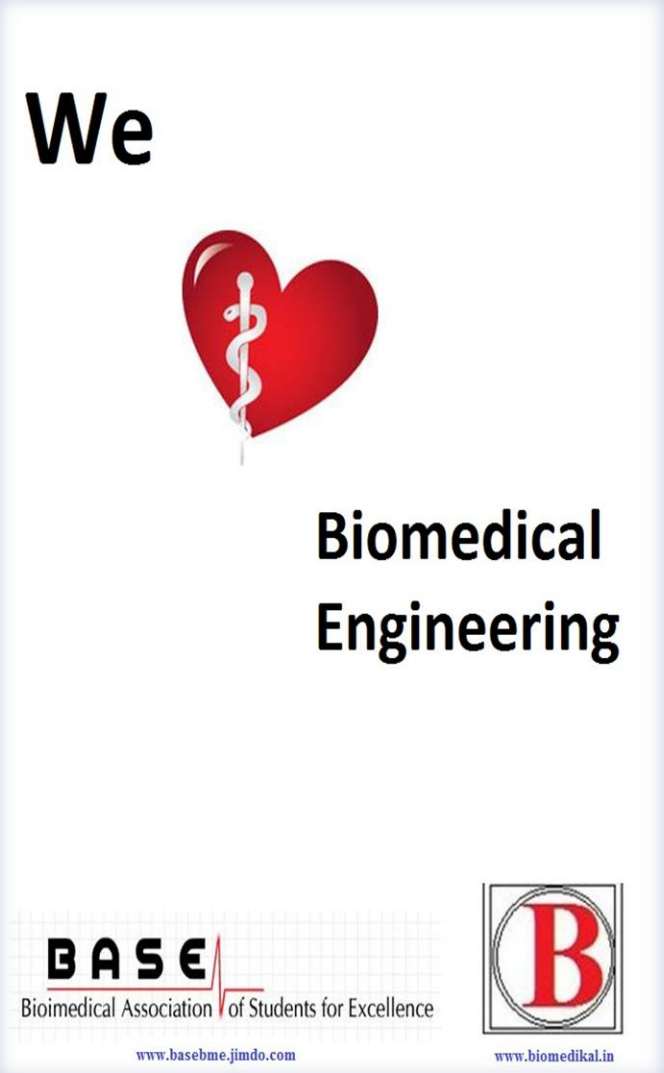
#SOGP Society Of Obstetrics and Gynecologists Of Pakistan

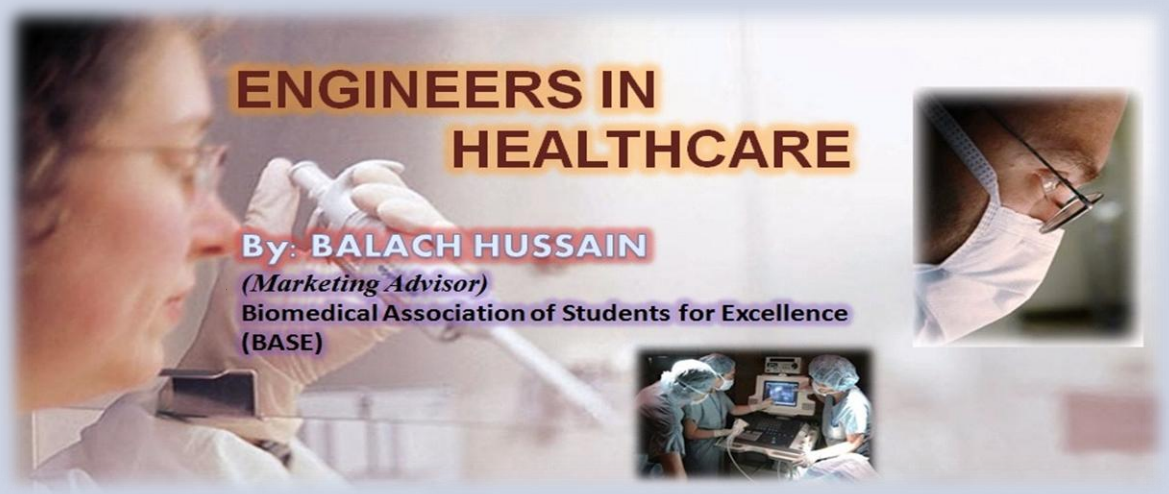


UMBILIKAL
E-Magazine

I work so hard and still do not manage to score well. I was studying whole night but it is of no use. Why that so? Why my mind went goes in exam? Is there problem with my brain? Why my memory is so poor? All these are the questions I usually hear from the students who study for days setting aside all of their activities and still fail to get good marks in exam. Let me answer those students who face this problem. You are okay and so is your brain. All you have to do is to transform your Short term memory into Long term memory.

Neurons are the brain cells, whenever they get some information they produce certain pathways specific for that particular information. When you need that information, brain access that pathway and gives it back to you. But, these pathways are short lived if you don't use them frequently; this is your Short term memory. If you want to use that information again, you have to make those pathways permanent. It is analogous to using computer. Whatever you are doing on computer ,it saves in its RAM(Random Access Memory) which is like short term memory and when computer is powered off, the information will gone if you don't save it on Hard disk which is computer Long term memory. So if you want to make these pathways permanent, use information often.

To make those pathways alive you have to revise things over and over. Take a self assessment test after some time because if you take your test immediately you will score good due to the reason that brain will find no difficulty in accessing the pathway which is currently being used. But, if you indulge yourself in something else and then take your exam, you will know before exam that you have forgotten this thing. So, the best thing before exam is to revise again and again, not just to score well but to keep that information alive throughout your life.



UMBILIKAL
E-Magazine

PAKISTAN, like many other countries, is facing problems in health and education for many years and was also among the top priorities of former governments. During 1960s, engineers were first inspired to work in the clinical environment in response to concern about patient safety as well as rapid procreation of clinical equipment's. In the process, a new engineering discipline evolved i.e. "Biomedical or Clinical Engineering".

In the not-too-distant past, a developing nation aimed to be seen as a country that is deficient in access to modern technology but today, increasing globalization can help make a new technology serviceable wherever that it might be useful.

Once I was sitting in a group discussion, someone with pure engineering discipline had asked a simple question what Biomedical engineers do? I replied biomedical engineers definitely work in industry, academic institutions, hospitals and government agencies, they spend their days designing electrical circuits and computer medical and engineering softwares, also one of the highly paid professions in the world. He replied "WOW" and then I continued to say that, this above definition is well known in foreign countries. But here in my country biomedical/clinical engineers define a person who studied 4-year programme of B.E/B.S and after graduation he luckily gets a job in low pay scale, getting 2-3 years of experience from market, engineer still finds himself in the same position where he was few years back. I further told him about Biomedical engineering that this distinctive profession is the merger of two titanic fields – medical and engineering. At this point, the realization of this modern technology in today's health care problem has to be understood by health care providers.

Anywhere in the world, health plays a primary role in determining the human capital. Better health improves the adaptability and the productivity of the labor; sooner or later contributes to the economic growth and leads to human welfare. Pakistan is becoming a country of countless extremity, healthcare is one of them. We have qualified, competent doctors with foreign specialization degrees, skilled nurses and paramedical staff. According to Wikipedia there are over 17,000 doctors of Pakistani origin in United States. Pakistan is the fourth highest source of international medical graduate doctors in the US as well as the fourth highest source of foreign dentists licensed in the United States. Pakistan, although the fact that it belongs to the third world, has some of the best hospitals in a class with international standards but our healthcare is still striving. In my viewpoint there is a large vacuum in implementing the clinical/biomedical engineering discipline in healthcare public sectors.

Though excellence in quality and luxury achieved by some private hospitals is also realizing the importance and need for clinical engineers but still is in its initial stage. There are a number of government/taluka/district hospitals but the major problem with most of them is the insufficiency of resources, incomplete services and clinical engineers. Due to this, low income families are restricted to visit hospitals with limited resources and staff or we can say government hospitals.

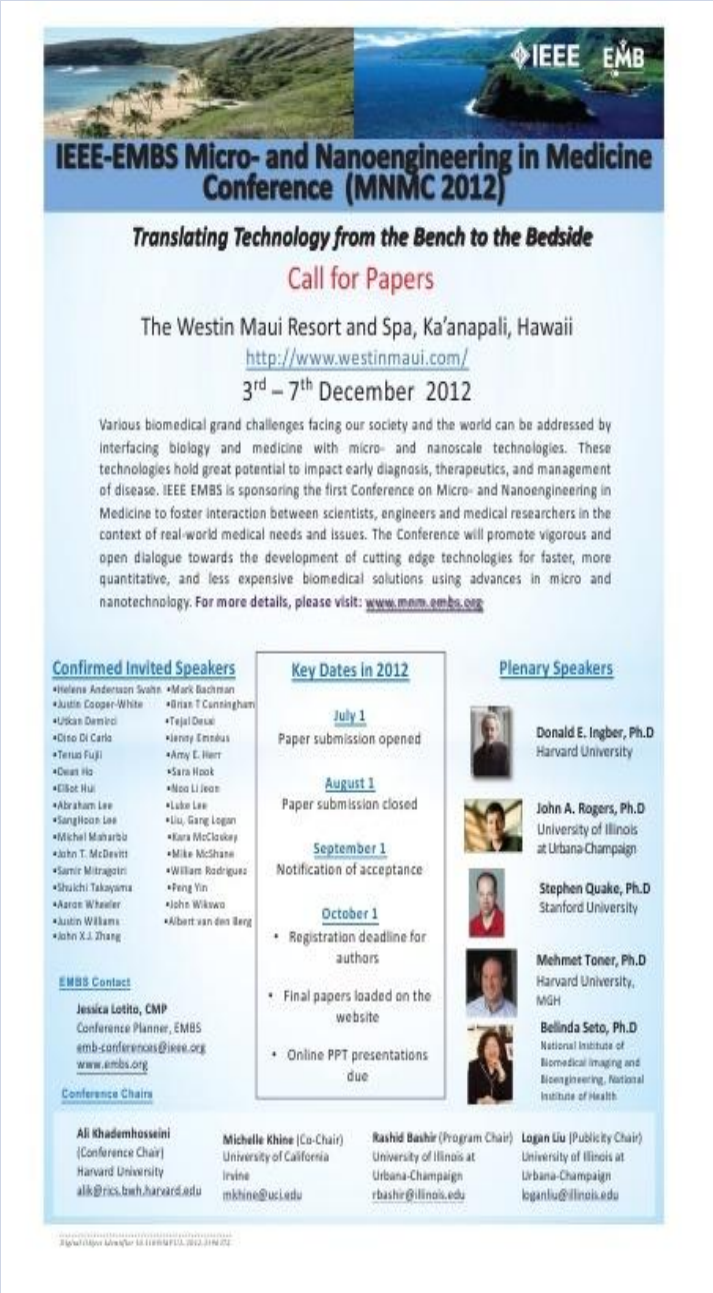
There is a world of difference between privately run hospitals and government run hospitals; private hospitals being more improved than those in the public sector. A few of these private hospitals are world class and can be easily comparable with any international institution. This image suggests that the main barrier in this regard is budget limitations from the government side and the fact that there is no realization what so ever for the profession of clinical/Biomedical engineering. But authorities in both sectors should be wise from the role of biomedical/clinical engineers

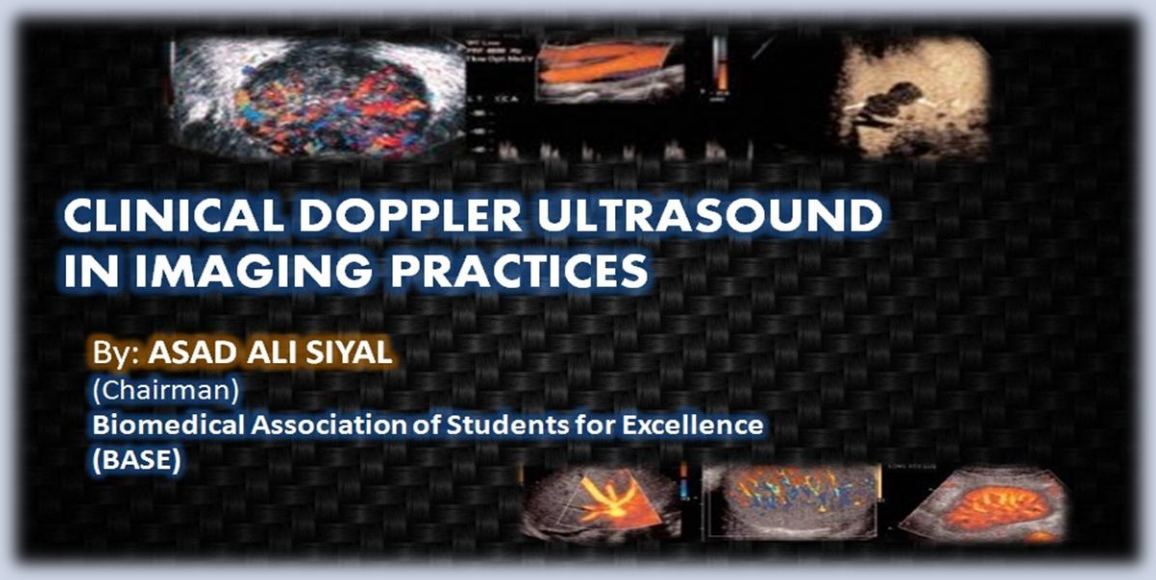
because they are often confused with another professional group in the hospital, the Biomedical Equipment Technicians (BMETs). In fact, these two groups perform different but equally valuable functions. The BMET is the person responsible for direct support, service, and repair of the medical equipment in the hospital. BMET education and training is usually of a more directly technical nature, and is supplemented with specific schooling in service to the equipment. BMETs answer the call when medical equipment fails to function properly and must work closely with nurses and other hospital staff, as well as the equipment vendor, as they service and maintain the equipment. The job of the clinical engineer, however, is somewhat different.

They generally have background in engineering applied to healthcare and the healthcare industry. Basically they are engineers who have completed a period of proper education in addition to defined experience as practicing biomedical/clinical engineers leading to mastery of a genuine core of knowledge.

The clinical engineer is involved at many levels in the safe, appropriate and economical use of technology in the health care system. Supported by BME technicians, the professional engineer is responsible for areas extending from design and maintenance of hardware to quality control and, where appropriate, the analysis of signals from medical instrumentation. The clinical engineering profession has changed its focus over time from equipment safety and control to healthcare technology management. But unfortunately medical manufacturing industries are not yet created.

In my view the authentic framework is required to bridge the gap between engineering technology and patient care. Currently, the status of Clinical/Biomedical Engineers in the developing world is far from satisfactory. The success and sustainability of BME's would fuel economic growth and substantial improvement in the quality of life. In this regard as a whole the engineers will play a key role in healthcare private and government sector. Both federal and provincial governments should make some policies in introducing Clinical/Biomedical engineering departments, cells, and vacancies in hospitals and in other healthcare organizations. If, at least one engineer will be deployed in civil, district and taluka hospitals the entire position will take 180 degree change and those people with skills. Knowledge and experience, who are struggling to find opportunity in foreign land will foresee their future home country and therefore the massive brain drain which is becoming gigantic day by day would come to an end.





UMBILIKAL
E-Magazine

"No medical treatment can be considered until a proper diagnosis has been established".

Ultrasound is one of the most basic and important medical imaging technologies yet. The past few years have witnessed a vast proliferation in the use and applications of ultrasound to diagnose circulatory disorders. Imaging possibilities of Doppler ultrasound have revolutionized radiology and imaging practices dramatically.

Since, during the mid of the twentieth century new imaging techniques, including some based on principles totally different from those of X-rays, were discovered. Ultrasonography was one such method that demonstrated fastidious potential and advanced greater benefit than traditional X-ray-based imaging.

During the last decade of the twentieth century, Doppler advancements have made ultrasound techniques so useful, so that the use of ultrasonography became increasingly common in medical practice and hospitals around the world. Scientific publications concluded the advantage and even the dominancy of ultrasonography over commonly used X-ray techniques, resulting in various significant changes in diagnostic imaging methods.

Clinical Doppler Ultrasound is a comprehensive analysis of the applications of Doppler Ultrasonography (US) and is particularly designed for radiologists, sonographers, and vascular surgeons engaged with laboratory and clinical practices.

Clinical Doppler Ultrasound systems have been used clinically in two ways. Firstly, ultrasound can provide an anatomical description of underlying tissues and their relative movement by direct echo, with display in one or two dimensions.

Secondly, flow and flow patterns in blood vessels or chambers may be studied when the Doppler principle is applied to ultrasound. In practice, echo and Doppler ultrasound are seen often complementary to each other rather than representing alternatives.

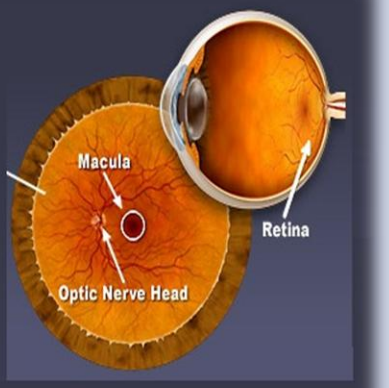
The capabilities of ultrasound flow imaging are also increasing enormously. Doppler ultrasound in general uses pulsed wave ultrasound. This allows measurement of the depth (or range) of the flow site as well as changing the size of the sample volume (or range gate). Color flow imaging can be used to recognize vessels requiring examination, to identify the presence and direction of flow, to highlight gross circulation anomalies, throughout the entire color flow image, and to provide beam/vessel angle correction for velocity measurements. Color flow Doppler ultrasound produces a color-coded map of Doppler shifts superimposed onto a B-mode ultrasound image. Although color flow imaging uses pulsed wave ultrasound, its processing differs from that used to provide the Doppler sonogram.

Apart from these all clinical Doppler ultrasound is also dealing with vascular diseases treatments. Transcutaneous Doppler ultrasound is being used widely in the diagnosis of many forms of peripheral vascular disease.

Clinical Doppler Ultrasound imaging is now in very widespread clinical use. This increasing curiosity reflects the fact that many tests being conducted by Doppler ultrasound technique are non-invasive and reliable, which do not require large investment of equipment or personnel.It can provide additional information during an ultrasound examination. Its role in the diagnosis is likely to continue to increase over the next few years as more centres and general practitioners turn to Doppler alternative techniques.

OCT: The Optical Ultrasound

By: Mohammad Ameel
(Head, Biomedical Engineer)
Era's Lucknow Medical College & Hospital
INDIA



UMBILIKAL E-Magazine

Although, 'Optical Coherence Tomography' does not employs any sort of sound energy, rather it uses a near infrared light, but still it is referred to as 'optical ultrasound' or 'intravascular ultrasound' or even sometimes as 'ultrasound biomicroscopy of the eye'. Optical coherence tomography (OCT), is a rapidly emerging technology for high-resolution medical imaging. OCT is analogous to ultrasound, measuring the back-reflection of infrared light rather than sound.

Optical Coherence Tomography is a technological advancement used for assessment and evaluation of integrity of anterior segment of eye, layers of retina and optic nerve, with precision. It helps in early diagnosis of the diseases with accuracy and so in management and follow up evaluation. As of today, this is the most important and desired tool for research work in the field of retinal and optic nerve diseases.

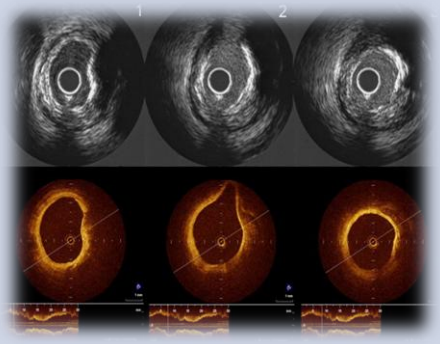
Understanding the literal meaning of 'Optical Coherence Tomography', the word optical refers to eye and coherence is the property of light of being in logical, orderly, and aesthetically consistent relationship. Whereas, the term tomography has been derived from the Greek word 'tomos', meaning 'slice'. Hence, tomography is the process of viewing an image in form slices or cross sectional view.

Constructing a tomographic image initiates by measurement of distance within the material or tissue. It is done so by measuring the echo time delay and intensity of backscattered or back reflected light. It can be a double dimensional or triple dimensional data set that represent differences in optical backscattering or back reflection in a cross sectional or volume (for two dimensional and three dimensional, respectively) in the form of an image.

The main reason for high resolution is the use of light rather than sound or radio frequency. When light is directed on the tissue, a small portion of it is reflected from the sub-surface and is collected. The remaining scattered light which has lost its original direction does not contribute in forming the image, rather it glares. The scattered light is filtered using the 'OCT' technique and the glare is removed resulting in a high resolution image.

Optical Coherence Tomography, forms sub-surface images of translucent and opaque materials at almost the resolution of a low-power microscope. However, OCT stands out in the medical community as it provides tissue morphology at much higher resolution than Magnetic Resonance Imaging (MRI) or ultrasound. Moreover, it gives direct imaging of tissue morphology with no ionizing radiations and any preparation time.

While buying an Optical Coherence Tomography system a few features should definitely be incorporated, that include 'Retinal Nerve Fiber Layer (RNFL) analyses, detailed study of deeper layer of retina, corneal thickness measurement and optic nerve head evaluation. Although, an Optical Coherence Tomography system is a hefty investment for a small organization of about Indian National Rupees Thirty Lakhs, but it proves to be a useful tool for optical diagnostics and research purposes.



Since Optical Coherence Tomography has better resolution and penetration than the conventional ultrasound and is safer as compared to 'Magnetic Resonance Imaging (MRI)', 'Computed Tomography (CT Scan)' and 'Positron Emission Tomography (PET)', it is likely to replace these techniques in other fields of biomedical and non-medical. As per now, it is the most desired research and diagnostic tool in the field of Ophthalmology.

Although, Ultrasound has its flag high in its forte, comparing ultrasound to OCT in its own field also has some advantages. Like, OCT does performs for transparent images as it works on light and ultrasound can work with its sound echo technique. Moreover, OCT gives diminished images for retinal and sub-retinal hemorrhages. Above that, OCT has not shown good results for pupil diameter below 4 millimeter. Hence, conventional ultrasound is in vogue yet.


NEWS
flash!

NEWS FLASH

‘Electronic Based Visual Aid for Blinds (e-VAB)’

Report By:

MIRZA ABDUL ALEEM BAIG

(Administrator)

Biomedical Association of Students for Excellence (BASE)

Blindness is an increasing issue due to so many factors like different types of diseases, sudden accident, environmental conditions, poisonous drugs and pesticides and so many others. Some types of blindness can be treated easily while some become permanent and cannot be cured. For recovering such blinds, the scientist are working and performing new research to overcome blindness problem. In this contest an engineering student from Pakistan did research on e-VAB (Electronic Based Visual Aid for Blinds) as a final year project.

Engineer Shah Faisal Qandhary belongs to the Tribal Area (FATA) Mohmand Agency – Khyber Pakhtunkhwa presented a paper at 27th IEEEP students’ seminar that was held at Hamdard University, Karachi on 28th Feb, 2012. On 14th March, 2012 e-VAB got 2nd position in Pakistan and awarded Gold Medal. E-VAB has been published in IEEEP magazine “Engineering Review” this is an achievement by Biomedical Engineering student in Pakistan for the first time.

The e-VAB is such an amazing aid which can provide a seeing environment for all types of blinds, either they are blinds by birth or lost their complete eyes/sight during any accident or due to any disaster. The e-VAB consists of a real time video camera, processing unit, Bluetooth transmitter/receiver and implantable microchip. The real time video camera will take the real time MPEG images and will pass that to the processing unit through connecting wires. The processing unit will make those images as compatible to the brain means lowering their voltage levels, reducing their frequencies and wavelength and making those inverts at the convex lens of the eyes does. Then the processing unit will pass those images to the Bluetooth transmitter and that Bluetooth transmitter will transmit those images inside the skull to the micro-chip which has been implanted already. And then finally the subject will see but the images will be black & white due to the lack of the cones which are present in the eyes. The e-VAB is portable and can be use easily; it has an ON/OFF button through which the subject can make it ON/OFF according to their desires. It is not so expensive and average peoples can afford it.

NEWS FLASH

'A current survey reveals that only 6% of mothers were reported of washing hands frequently every day, a study published in FUUAST journal of Biology by *Sikandar Sherwani*-Hygiene specialist'

Report By:

TAYYABA AMEEN

(Coordinator)

Biomedical Association of Students for Excellence (BASE)

We have indeed believe in cleanliness being muslims which is infact a part and parcel of the faith. Our prophet Mohammad (PBUH) has also strictly instructed every Muslim must wash their hands frequently every day. Islam laid great stress that cleanliness is half to Godliness that is universally true. Mother is nodoubt an integral component of our family. In Pakistani societies, and off course in the entire world, they are the one who are responsible for taking care of the family members and especially their children. As rightly said, mother's lap is the first institution of a child. For evaluating mother's hand hygiene, a study was conducted by a faculty member, Federal Urdu University of Arts, Science and Technology-Karachi, Mr. Sikandar Khan Sherwani-an expert in Infectious diseases along with some co authors, Asma Bashir (SZABIST), Haroon Ahmed (PU) and Syed Iqbal Alam (FUUAST), titled as KNOWLEDGE, ATTITUDE AND PRACTICES OF WASHING HANDS AMONG MOTHERS IN KARACHI, PAKISTAN published in a first issue of National Scientific Journal of Pakistan, FUUAST Journal of Biology (www.fuuastjb.com) in 2011 highlighted that mothers should strictly follow the hand hygiene practices as these germs can find many routes e.g. food, water etc. from mother hand to the body of the family members and children, resulting in dangerous diseases like diarrhea, gastroenteritis etc. This survey is the first survey indicating the picture of hygienic status of mothers in Pakistan, it highlighted the significance of hand washing and also indicated the knowledge and practices among 250 mothers between the age group 22-35 in belong to Karachi, the cosmopolitan city of Pakistan by direct filling of questionnaire and short interviews. The results of the survey indicated that 24% were also not aware that gastroenteritis and diaherral diseases can be transmitted to their kids due to their improper hand washing practices. Similarly, about 6% were reported of washing hands frequently each day and 72% spend hardly less than a minute in this activity. In addition to this, among interviewed mothers 60% responded washing hands with soap as compared to the 32% and 40% wash with some detergents and plain water respectively. Moreover, 56% mothers were found to have long nails and about 40% of them had dirt in them. In interview, 16% were found only educating their kids about hand washing procedures and 72% of the mothers were in favour of introducing a course of hand hygiene for school going kids. The results of the survey conducted among mothers to evaluate their knowledge and practices about hand washing is disheartening and strongly realized their fact that that there is a dire need to promote awareness among mothers so that they may protect their kids catching infections.

NEWS FLASH

'BASE-VOLUNTEERS SELECTED OFFICIALLY'

Report By:

SWATHIE REDDY

(Indian - Representative)

Biomedical Association of Students for Excellence (BASE)

Biomedical Association of Students for Excellence (BASE) has selected its 'BASE-Volunteers' officially under its 'BASE-Leadership Program'. A call for volunteers was announced earlier & students from India, Pakistan & Nepal had applied for the vacancies. After a meeting of concerned officials a team of volunteers was selected officially for different BASE -projects. Here are the names of volunteers who were selected.

PAKISTAN

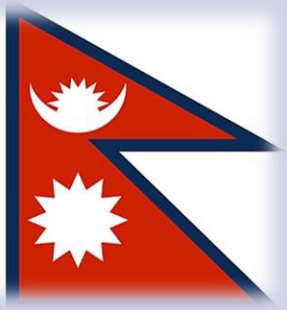
A. Fawad Channa
B. Hafiz Ghulammohyuddin
C. Amna Bajwa
D. Wafa Arshad
E. Marium Shaikh
F. Anjum Araa
G. Vinesh Kumar
H. Faisal Rehman
I. Saad Farooque
J. Mohsin Muntazir
K. Warda Qureshi

INDIA

A. E. Srikar
B. Fredrick Johnson
C. BS Mahima Sharma
D. Pavithra M.N
E. Vishnu Kaky
F. Manas Kumar Nag

NEPAL

A. Tachal Niraula
B. Sujata Bhattarai
C. Laxman Bhusal
D. Saurabh Gautam



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