



AIMST E-BULLETIN



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UNIVERSITY**

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Protect Mother Nature



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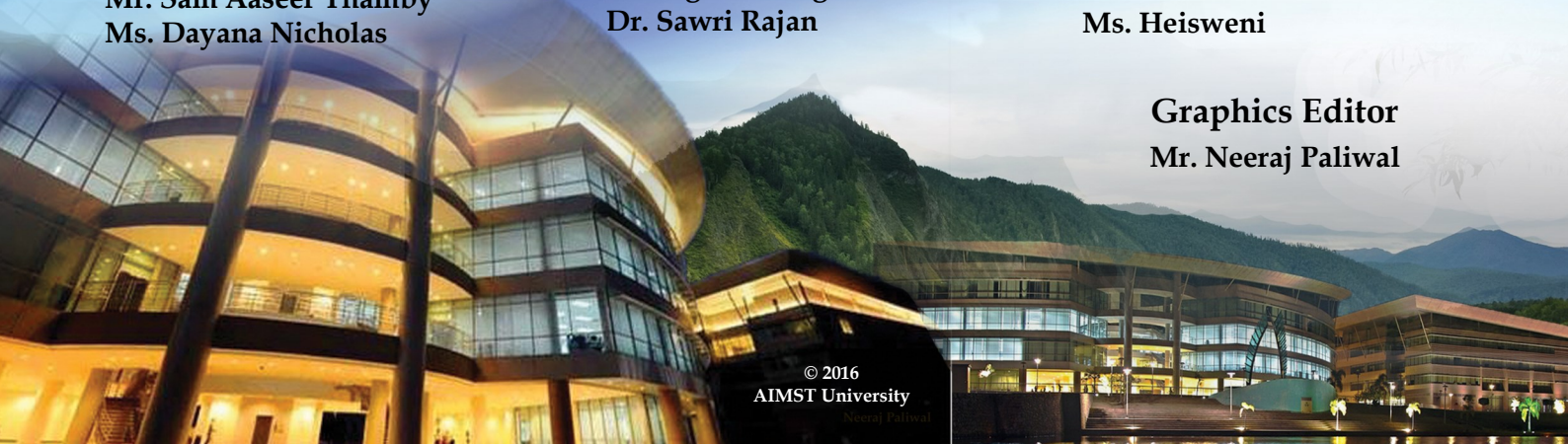
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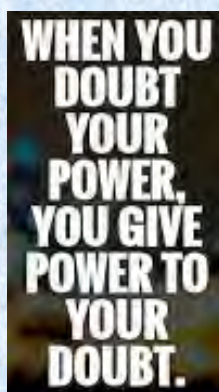
Looking back on my life, I realize that every time I was rejected from something good, I was actually being re-directed to something far better. Now, I have the maturity to know 'sometimes silence is more powerful than having the last word'. Anything that annoys you is teaching you patience. Anyone who abandons you is teaching you how to stand-up on your own feet. Anything that angers you is teaching you compassion, and anything you can't control is teaching you how to let it go. Yes, as quoted by Peng Joan 'There is power in silence. Let your work, not your words speak for itself'. Lions do not have to roar.



One of the hardest things in life is 'letting go' - whether it's guilt, anger, love, loss or betrayal. Change is never easy, we fight to hold on and fight to let go. Nobody is perfect and nobody is correct at the end. Affection is always greater than perfection. Sometimes the best thing you can do is keep your mouth shut and your eyes open. Be soft - do not let the world harden you. Do not let pain make you hate. Do not let the bitterness steal your sweetness. Be selective with your battles. Sometimes, peace is better than being right. Forgive people in your life, even those who are not sorry for their actions. Holding on to anger only hurts you, not them.

Be thankful for all those difficult people in your life. They have shown you exactly who you do not want to be. A person who feels appreciated will always do more than what was expected. The truth will always come out at the end. Things will start changing for the better when you begin trusting yourself.

A strong person loves, forgives, walks away, lets go, tries again, perseveres. No matter what life throws at him. So, be strong but not rude; be kind, but not weak; be bold, but don't bully; be humble, but not shy; be



proud, but not arrogant. Strong people will automatically stop trying, if they feel they're unwanted. They won't fix it or beg. They will just walk away (Listen to Craig David's song 'Walkin' Away'). Never discredit your gut instinct. You are not paranoid. Your body can pick up on bad vibrations. If something deep inside you says something is not right about a person or a situation, trust it. You should never be 'always there' for someone who isn't always there for you because they always end up taking you for granted. The ability to speak several languages is valuable, but the ability to keep your mouth hush in any language is priceless. There is a purpose for every one you meet. Some people come into your life to test you, some to teach you, some to use you and some to bring out the very best in you. So, 'Don't do what others say, just listen', but **'DO WHAT YOU FEEL IS GOOD'**. Always remember, you are responsible for what you say, but not responsible for what others understand.

Courtesy: All quotes in the article are taken from google-quotes and/or Facebook.

Mr. Abdul Nazer Ali, Editor-in-Chief, AIMST e-Bulletin.

Cover Page Story

'AIMST University - World Environment Day Events - WED 2016'

World Environment Day is joyously celebrated every year on the 5th of June to raise global awareness for taking positive initiatives to protect the natural environmental resources and the planet, Earth. The burgeoning population growth and the progressing economic development with high exploitation of natural resources has caused extreme degradation and pollution that has brutally affected the delicate ecosystem, leading to loss of biodiversity. To address these growing environmental challenges, it is the responsibility of all the citizens to play an active role in protecting our environment for a sustainable future.

There is a global increase in health-related issues due to pollution of water, air, soil, poor sanitation and vector borne diseases. Sustainable environment is the key that provides an answer to the question, how human beings can coexist harmoniously with nature and the Earth. In conjunction with WED 2016, AIMST University proudly organized a seminar and other creative awareness events dedicated to preserve the environment. It was a great opportunity for all of us to be motivated to empower ourselves as an agent for change to ensure positive impact on the planet.

The following activities were scheduled for the occasion:

6th June 2016 – Planting of saplings in AIMST University Campus, Slogan Writing Competition.

15th July 2016 – Seminar on Integrated Fish Farming and Sustainable Aquaculture.

Continued...

Cover Page Story

17th September 2016 – AIMST UNIVERSITY WED 2016 – Cycling Event.

22nd September 2016 – National Seminar on Sustainable Environment and Health, Intervarsity Debate Competition, Interschool Quiz Competition, Trash to Treasure Innovation Competition.



Contributed by: WED 2016 Organizing Committee, AIMST University, Malaysia.

Homage Message

Colleagues and Students,

With deep sorrow, we inform the sad demise of **Dr. Sudhakaran (48)**, an excellent and admirable academican who passed away this June 23, 2016. He served the Faculty of Applied Science, AIMST University from 2003 to 2009 at various levels. May god give the strength to his family members and may his soul rest in peace. Please pray for the departed soul and for the heartbroken family members to have strength to bear the big loss.



With sincere prayers,
Faculty of Applied Science (FAS),
AIMST University, Malaysia.

Journey of Faculty of Dentistry (FOD) at AIMST

The Faculty of Dentistry (FOD) began its journey in the year 2005 from the interim campus of AIMST University, with the pride of being the first dental school instigated by a private university in Malaysia. The Bachelor of Dental Surgery (BDS) degree program was established by Professor Dr. Frederick Charles Smales, who was also the founder Dean. The curriculum for the BDS program was designed by Professor Dr. Margaret B. Comfort and was implemented with the first intake of 40 students in August 2005. Subsequently, the students' intake increased every year and reached 75 per intake in the year 2008.

The staff strength was simultaneously increased as per the needs. Successively, the faculty acquired the state of the art infrastructure for dental equipments and well-designed dental laboratories at the new green ultra-modern campus in Semeling. Thus far, FOD has produced about 320 qualified dental professionals. In 2015, MQA approved the application to start the Bachelor of Dental Technology (BDT) degree program which is the first ever degree program in Dental Technology introduced in Malaysia. Currently, FOD offers two degree programs; BDS and BDT.

The AIMST Dental Care Centre was officially inaugurated on November 3, 2008 and Datuk. Dr. Rohani Ramili was appointed as the Director of the Dental Care Centre. Currently it has developed into a full-fledged Dental hospital with a Reception & Primary Care unit, 2 polyclinics, 3 specialty clinics and a Radiology Unit. The AIMST Dental Care provides a full range of free dental treatment for all the patients attending the clinic. Though challenging, the establishment and continuation of AIMST Dental Care Centre has proved to be a stimulating and rewarding exercise. The total number of patients registered has crossed over 25,000 and AIMST Dental Care Centre will proudly continue to provide high quality dental treatment with the vision of serving the community.

The progress of the faculty and dental care centre is narrated in the chronological order as follows:

- 2007 – AIMST Dental Students' Association (ADSA) was established.
- 2008 – Faculty of Dentistry was shifted from interim campus to the new campus in Semeling.
- 2008 – AIMST Dental Care Centre officially inaugurated.
- 2008 – Treatment of adult patients by dental students commenced in the AIMST, Dental Care Centre.
- 2009 – The Dental school attained faculty status.
- 2009 – Opening of the Oral Surgery, Paediatric Dentistry & Orthodontic Clinics in the Dental Care Centre for patient care and clinical teaching.
- 2010 – First full accreditation visit by MQA.
- 2010 – Conferment of degree to first cohort of BDS graduates.
- 2010 – Full accreditation awarded by MQA for the BDS degree program for 3 years (2010- 2013).
- 2010 – The first cohort of BDS graduates joined the Oral Health Division of MOH as dental officers.
- 2011 – AIMST Dental Students Association successfully conducted 1st Oral Health Awareness Campaign.
- 2011 – Faculty of Dentistry organized Intervarsity Sport Event with participation from three Universities.
- 2012 – Final Year Dental students obtained 'The Young Travel Award' for their poster presentation at the International Association of Dental Research conference in Kuala Lumpur.
- 2014 – Faculty of Dentistry organized Intervarsity Sport Event with participation from 11 Universities and also won the overall championship.
- 2014 – The 6th National Dental Students Scientific Conference (NDSSC) was organized by FOD and was attended by eleven dental schools in Malaysia.
- 2015 – Faculty of Dentistry was awarded provisional accreditation for Bachelor of Dental Technology program by MQA.
- 2015 – First cohort of students joined BDT programme.
- 2016 – Total number of registered & treated patients at AIMST Dental Care Centre has crossed 25,000.
- 2016 – Faculty of Dentistry students emerged as Champions in National Dental Intervarsity Sports Carnival, 2016.
- 2016 – Faculty of Dentistry student secured Championship in Intervarsity Prosthodontic Competition "Bridging the Gap".

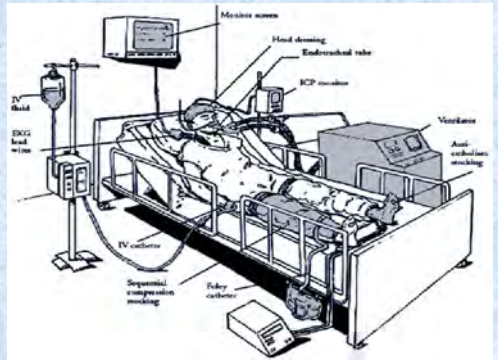


Contributed by: Dr. Ramesh Kumaresan, AIMST University, Malaysia.

Health Issues

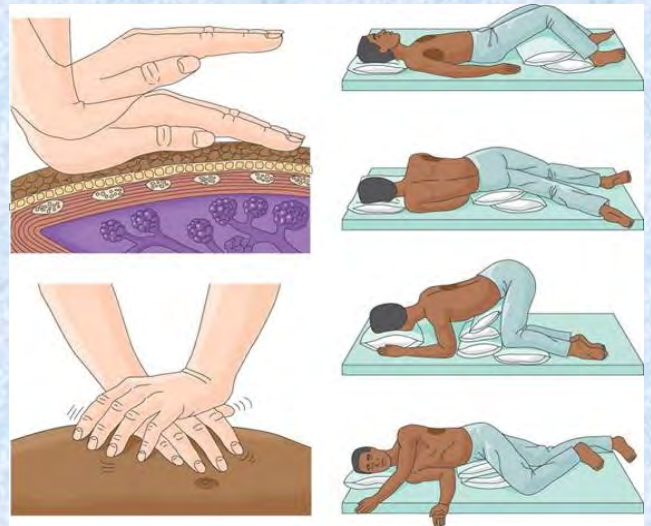
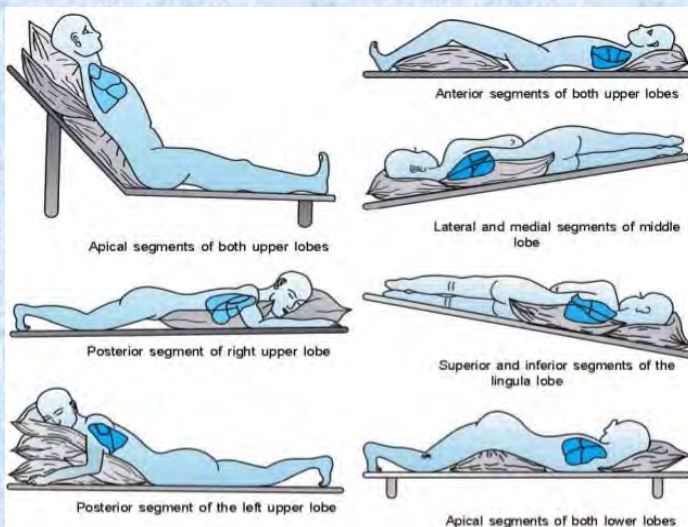
'Physiotherapy in Intensive Care Unit to improve Respiratory Hygiene'

Everything seems to be ok as long as life provides you little happiness, peace, surprises and fun-filled twists. Nobody expects the sour experience in the near future. But life is unpredictable, sometimes it gives us hardship. Especially, during life-threatening health consequences and you see your dear ones in Intensive Care Unit (ICU) fighting for their life. Physiotherapy and Intensive care established its first link in the late 70's. As the name itself suggests, ICU is where doctors and nurses work relentlessly day and night monitoring and treating the patients' vital organ dysfunctions. Lucky are those who manage to fight against their illness. Unfortunately, some remain for extended period in ICU. During this time, physiotherapy has a crucial role in rehabilitation.^{1,2}



Usually, a patient admitted for a long time in ICU, suffers from lung, cardiac, arterial, venous, muscle, bone and/or lymph related problems. The physiotherapist advocates the position technique and help them to respire effectively. We teach them how to breathe efficiently so that the lungs deliver oxygen to distant cells. Moreover, we advise patient to effectively cough to clear the phlegm.³

In many instances, simple application of thump to chest is required to loosen and remove respiratory secretions. Particularly, those who are unconscious and unable to clear the lung secretions. In addition, patients who are attached to the ventilators are more vulnerable to get the accumulation of secretions and infections, for such individuals, we infuse the lung with oxygen prior to our manipulation over the chest and induce a cough so that airways are free of clog and patent.^{4,5}



Those who have partial control over respiration are introduced with many respiratory exercises to evacuate secretions effectively, such as huffing, coughing, active cycle of breathing exercises, autogenic drainage, etc.⁵ In short, physiotherapy in ICU has proved its enormous influence and value on the lung conditions with preventive and curative roles.

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Contributed by: Mahesh V. Hegde, AIMST University, Malaysia.



'Primary and Permanent Teeth' - All you need to know

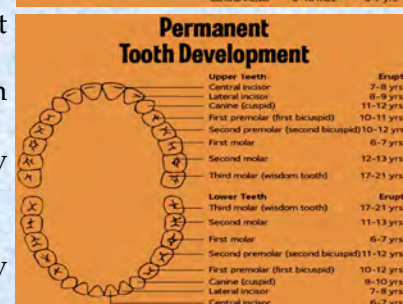
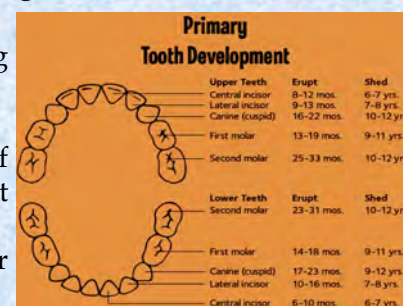
Eruption of Primary Teeth

It is very unusual to imagine a new born having teeth. However, at birth, the new born has crowns of all the 20 baby teeth (milk/ primary/ deciduous teeth) completely formed and hidden inside the infants jaw bones. The primary teeth gradually erupt through the gums during the first 2^{1/2} years of life.¹ The four front teeth namely, two upper and two lower usually erupt first, beginning as early as six to eight months after birth. Most children have a full set of primary teeth or milk teeth by the age of three. The child's jaws continue to grow, making room for the permanent (adult) teeth that will begin to erupt at about six years. The primary tooth begins to shed between 6 and 7 years of age and continues until about 12 years.²

A child's primary teeth need to be strong and healthy mainly to chew food easily and also to pronounce words properly, remain free of cavities and oral pain. This first set of teeth also holds a place in the jaw for the permanent teeth, which move as the primary teeth are shed. Tooth decay in infants and toddlers called early childhood caries, baby bottle tooth decay or nursing mouth syndrome can sometimes destroy the teeth. Infection from decayed primary teeth can damage the permanent teeth developing under them.³ Hence, primary teeth, even though temporary inside the oral cavity deserves good care.

Tooth decay in infants can be prevented by:²

- Never allowing the infant or toddler to fall asleep with a bottle containing milk, formula, fruit juices or sweetened liquid.
- Not using a pacifier dipped in sugar or honey.
- Using a clean pacifier as recommended by your dentist or pediatrician if the infant or toddler needs a comforter between regular feedings or at bedtime.
- Cleaning the infants' gums with a wet cloth or a clean gauze pad after each feeding to remove any residues of milk or sweetened juices.
- Beginning to brush the child's teeth with a little water as soon as the first tooth appears.
- Supervising the tooth brushing to make sure that children use optimum amount of fluoride toothpaste and avoid swallowing it.
- Training the children to spit out remaining toothpaste and rinse thoroughly with water after each brushing.⁴



Eruption of Permanent teeth:

All individuals develop two sets of teeth in their lifetime - first primary followed by permanent teeth.

The number of primary teeth is 20 (10 in each jaw) replaced with permanent teeth which are 28 (14 in each jaw) and added with 4 wisdom teeth (altogether 16 teeth in each jaw). The first permanent teeth to erupt in the oral cavity are the molars also called "six year molars". They are known as the "extra" permanent teeth as they do not replace the primary teeth. They erupt as an extra set of teeth. The six-year molars also help determine the shape of the lower face, affect the position and health of other permanent teeth.¹

Most children have all their 28 permanent teeth by 13 years of age. These include four central incisors (2 + 2 i.e. upper jaw and lower jaw), four lateral incisors (2 + 2), eight premolars (4 + 4), four canines (2 + 2), and eight molars (4 + 4).

The last of the permanent teeth to appear are called "third molars," or "wisdom teeth." They usually begin to erupt pushing their way through the gums between the age of 17 and 21 years. Because they erupt so far back inside the mouth, third molars often are not needed for chewing and are difficult to keep clean as the tooth brush doesn't reach that far. Your dentist may recommend their removal to prevent potential complications when third molars are erupted partially or are impacted. Heredity and other factors play a major role in the approximate ages at which children's primary teeth shed and their permanent teeth emerge.²

Tooth decay in children can be prevented by:

- Careful and frequent brushing with a toothbrush that helps to prevent build-up of plaque bacteria on the teeth.
- Proper cleaning of teeth as part of oral hygiene and removal of dental plaque to prevent cavities or dental caries, gingivitis and periodontal disease.
- Using dental floss or interdental brushes for cleaning between the teeth and prevent build-up of plaque bacteria.

Continued...

Health Issues

- Use of fluoride, a mineral that helps prevent caries and repair teeth in the very early, microscopic stages of the disease. Topical fluorides are applied directly to the tooth enamel. Systemic fluorides are those that are swallowed.
- Use of dental sealants/ pit and fissure sealants have been recognized as an effective approach in preventing dental caries in infectious oral disease.⁵

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Contributed by: Dr. Neeraja Turagam and Dr. Durga Prasad Mudrakola, AIMST University, Malaysia.

'Role of Physiotherapy in the Management of Piriformis Syndrome'

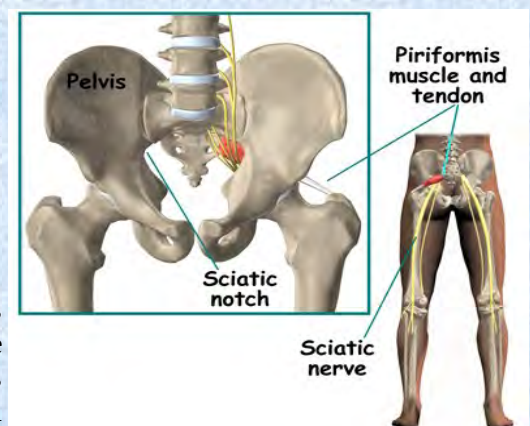
Piriformis syndrome is an entrapment neuropathy that presents as pain in leg and buttock, numbness, paresthesia and associated muscle weakness in the distribution of the sciatic nerve.¹ The age of incidence for piriformis syndrome is usually in the fourth and fifth decades of life.²

The incidence of piriformis syndrome among the patients with low back pain vary from 5% to 36 % and it is estimated that a minimum of 6% patients are wrongly diagnosed for low back pain where they are actually suffering from piriformis syndrome. It is more common in women than men, possibly because of the wider 'Q' angle in women.³

The piriformis is a triangular muscle that enters the gluteal region from the pelvis through the greater sciatic foramen. In the gluteal region, it crosses laterally to insert onto the greater trochanter of the femur. The sciatic nerve, forming a continuation of the sacral plexus, enters the buttock by passing through the greater sciatic foramen in the interval between the piriformis and superior gemellus. In 96% of population, the sciatic nerve exits the greater sciatic foramen deep along the inferior surface of the piriformis muscle. In around 22%, the sciatic either pierces or splits the piriformis muscle or both making them vulnerable for piriformis syndrome.³

Delay in the diagnosis of piriformis syndrome can lead to chronic somatic dysfunction. The piriformis syndrome is mainly due to the direct trauma to the sacroiliac and gluteal region and occasionally as a result of repetitive pressure on the piriformis muscle leading to spasm and inflammation of the muscle resulting in increased pressure over the underlying sciatic nerve.^{1,3}

There are many treatment options available conservatively by physiotherapy which includes cryotherapy, thermotherapy, gentle pain-free stretching and manipulative therapy. All these techniques are beneficial in relieving pain and symptoms.⁴ Dexamethasone iontophoresis in combination with strong surged faradic currents is more effective in alleviating pain and improving functional abilities in patients with piriformis syndrome.



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Contributed by: Mr. A. N. Sundaresan, Mr. R. Rishi Kesavan and Mr. J. Karthikeyan, AIMST University, Malaysia.



'Delayed Onset of Muscle Soreness (DOMS)'

DOMS:

Delayed onset of muscle soreness (DOMS), occurs after exercise has been completed. DOMS increases in intensity in the first 24 hours after exercise, peaks from 24 - 48 hours, and then subsides within 5-7 days post-exercise.¹ Muscle soreness can be differentiated as 'acute' or 'delayed', depending upon its onset.² Delayed onset muscle soreness is a symptom of exercise-induced muscle damage and the other, acute muscle soreness appears during and immediately after exercise. DOMS presenting with pain, is associated with decreased range of motion and strength.³ Due to the sensation of pain and discomfort which can impair physical training and performance, prevention or treatment of DOMS is of great concern to coaches, trainers and therapists.^{2,4}

CHARACTERISTICS:

The soreness is perceived as a dull aching pain in the affected muscle, often combined with tenderness and stiffness. The pain is felt only when the muscle is stretched, contracted or put under pressure not when it is at rest. Although there is variance among exercises and individuals, the soreness usually increases in intensity in the first 24 hours after exercise, peaks from 24 to 72 hours, then subsides and disappears after about five to seven days post exercise.

CAUSES:

The soreness is caused by eccentric exercise consisting of eccentric (lengthening) contractions whereas, Isometric (static) exercise causes much less soreness and concentric (shortening) exercise causes none. DOMS is often precipitated predominantly by eccentric exercise, such as downhill running, plyometrics and resistance training.³ In other words, shocking the muscles during the eccentric range of motion is probably the leading factor in producing DOMS.⁵

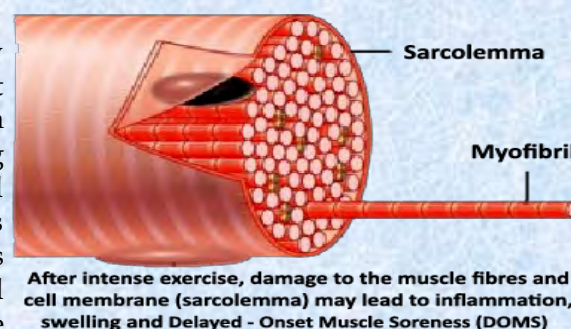
MECHANISM:

DOMS is assumed to be initiated by a mechanical disruption of the muscle fibre at the cellular level and a reduction in maximal muscle strength, an increase in concentration of plasma-CK and a decrease in PCr/Pi ratio (measured with ³¹P-magnetic resonance spectroscopy) seem to be the indirect signs of mechanical disruptions in relation to DOMS.⁶ Delayed onset muscle soreness was first described in 1902 by Theodore Hough, who concluded that this kind of soreness is "fundamentally the result of ruptures within the muscle". This is still considered broadly valid, although the soreness does not appear to involve the rupture of whole muscle fibers. What has been observed to accompany soreness is ultra structural disruption of myo-filaments, especially at the Z-disc, as well as damage to the muscle's connective tissue. The tissue damage may relate most directly to soreness, as it may increase the mechanical sensitivity of the muscle nociceptors, or pain receptors and cause pain with stretching and palpation. The delayed onset of the soreness may occur because the inflammatory response process that sensitizes the nociceptors takes some time. However, the relationship between damage, inflammation and soreness is not yet completely understood.⁷

PATHO-PHYSIOLOGY:

The degree of discomfort experienced post-exercise depends on a large extent upon the intensity and duration of effort, as well as the type of exercise performed. The level of DOMS does not reflect the extent of muscle damage, and the course of DOMS does not correspond to the course of changes in other indicators of muscle damage. All physical tasks consists of some combination of concentric, isometric and eccentric muscle activity.²

Eccentric muscle activity is defined as the force generated by muscles as they lengthen, is known to cause the greatest post-exercise discomfort.⁴ Eccentric muscle activity is an integral component in activity of daily living such as descending stairs, squatting, lowering an object and general coordinated activity, etc. The etiology of DOMS and their treatment has been addressed by many researchers. Although DOMS is experienced widely, science has not established a sound and consistent treatment for the same.⁵ Recent researches have shown that Vibration Training (VT) may improve muscle performance.⁴



Continued...

Health Issues

MANAGEMENT:

Several authors have suggested that physical exercises are very important in the prevention of several diseases and to maintain the human health. However, in some situations, undesirable conditions have been reported. DOMS has been described as an undesirable side effect of exercises and pain, tenderness, swelling, and muscle stiffness may be felt after a relatively small period of time. These side-effects can produce unwanted inconveniences to daily activities.

Thompson and Belanger (2002) showed that VT may increase muscle spindle activities and establish motor unit activity synchronisation that may optimise neuromuscular function. By contrast, it has been shown that muscle spindle stimulation by vibration may increase the afferent activities of muscle spindles which may increase background tension in the vibrated muscles. This increased background tension and motor unit activity synchronisation in the vibrated muscle may prevent sarcoma disruption or damage to excitation-contraction coupling, which may happen due to tension development during eccentric exercise. Therefore, this optimised muscle performance may control and prevent muscle damage and thus reduces DOMS.

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Contributed by: Mr. Albin Jerome, Ms. Elil Suthamathi and Ms. Jency Sudha, AIMST University, Malaysia.



Health Tips

'Bad Breath (Halitosis)'

Halitosis colloquially called bad breath or fetor oris, is a condition where foul smell comes from the individuals mouth, a social taboo; and can sometimes trigger social anxiety, cause harm to professional and public interactions, leading to one's inferiority complexes. Bad breath is a common problem that can affect anyone at any age characterized by bad taste in the mouth, usually sour or bitter and the tongue covered by a film of mucus.

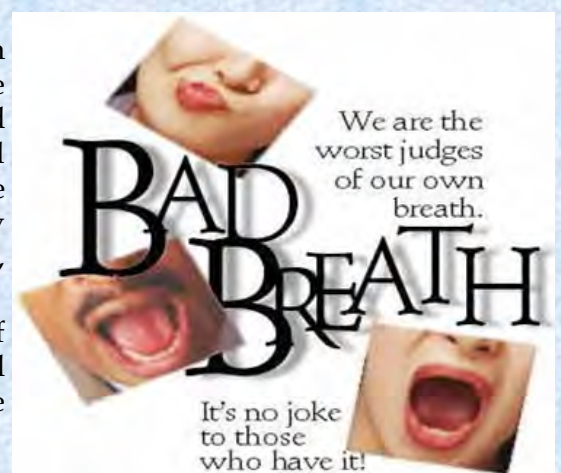
Often the odour is caused by bacteria present below the gum line and on the back of the tongue. About one in four people are thought to have bad breath on a regular basis and estimated to be the third most frequent reason for people to seek dental care.¹ Significant percentage (5-72%) are been reported to have no genuine halitosis when professionally examined and only 10% is accounted for disorders in the nasal cavity, sinuses, throat, lungs, oesophagus, stomach or elsewhere.²

According to a study by dental researchers at the University of Buffalo, brushing the teeth twice a day with anti-bacterial toothpaste and utilizing a tongue cleaner can greatly reduce bad breath.³

What causes bad breath?

It's usually the result of poor oral hygiene. Bacteria break down pieces of food in the mouth, and may release toxins, an unpleasant-smelling gas.

Persistent bad breath can sometimes be a sign of gum disease. Eating strong flavoured foods, smoking, alcohol can cause bad breath and occasionally, after an infection as a result of certain medications.



Continued...

Health Tips

There are many foods that can cause bad breath and some common foods to avoid:-

- Pungent foods like onions, garlic and ginger.
- Fish such as anchovies and tunas.
- Cheese, especially Roquefort, Camembert and blue cheese. Specialty meats available at the deli such as pastrami, salami and pepperoni.

The following are some factors for bad breath:²

- Odors are more with dry mouth that explains the presence of a very offensive odor every morning.
- Odors are more just after a meal when the microorganisms act upon the food particles in the teeth.
- Odors are more in hot season or when fasting.
- Foods such as ginger, garlic, onion, etc. produce a very offensive odor due to strong mineral content, sulfur.
- Smoking and alcoholism. Prime factor is lack of dental hygiene.
- A few medications to cause bad breath are triamterene, paraldehyde, disulfiram, antihistamines, etc.

How do I know I have bad breath?

It's not always easy to tell if you have bad breath. Mostly people may notice it first, but they could feel uncomfortable telling you. A simple test is to lick the inside of your wrist with the back of your tongue and wait a few seconds until the saliva dries. If your wrist smells unpleasant, it's likely you have bad breath.²

Symptoms of bad breath:

Dry mouth, mouth tastes sour or bitter, tonsils with presence of white nodules, formation of yellow/white-colored layer over the tongue, drainage of mucus from nasal passage.

When to seek medical advice:

When bad breath persists after practicing proper dental hygiene contact your dentist/ GP as there may be a medical cause.⁴

How to prevent and Cure Bad Breath (Halitosis):⁵

The most effective way of maintaining fresh breath is to practice good oral hygiene. It is very important to monitor the breath closely as bad breath becomes more and more severe with time. The common dental guidelines are the following:

- Gargle your mouth thoroughly after each meal/drink.
- The teeth must be brushed at least twice a day, morning and night before bed.
- Special attention while brushing, to the interspaces between teeth and the last molar (upper and lower jaw).
- Any embedded food particle must be extricated with toothpicks.
- The tongue should be cleaned daily with a tongue cleaner.
- Mouth fresheners (Mints etc.) which kill the bacteria should be used regularly.



Home Remedies for Bad Breath

Organic Facts
www.organicfacts.net

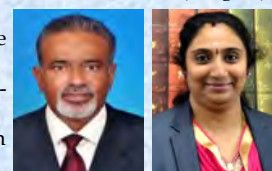
- Use of fennel seeds provides relief from bad breath
- Cinnamon helps to remove bad odour
- Brushing teeth with baking soda helps to improve smell of breath
- Gargling with mixture prepared by boiling clove in water is an effective remedy
- Use of mouthwash made by boiling parsley, clove and myrrh in water is a good remedy
- Mint and wintergreen help to neutralize bad breath
- Lemon and cardamom help to remove bad odor
- Chewing hazelnut, mint or basil leaves helps to eradicate bad breath






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Contributed by: Mr. Abdul Nazer Ali and Dr. Shalini Sivadasan, AIMST University, Malaysia.

Health Tips

'Oral Alterations in Woman's Reproductive Health'

Estrogen and progesterone are the two female sex hormones that have a significant effect in the five phases of a women's reproductive health. Estrogen is vital in development and maintenance of secondary sex characteristics, uterine growth, pulsatile release of luteinizing hormone, development of peripheral and axial skeleton. Progesterone is secreted by corpus luteum, placenta and adrenal cortex.¹ It stimulates production of inflammatory mediators and is involved in bone metabolism. These hormonal alterations are reflected in oral soft tissues, as the receptors are present in gingiva and periodontium. The series of biological changes subjected to hormonal influences in women are summarized below.

Puberty: Production of sex hormones increase between 11-14 years in women. Gingiva may become erythematous, lobulated, tender and retractable. This may not be associated with oral biofilm levels. Increased prevalence of *P. intermedia* and *Capnocytophaga* species are noticed, which may use ovarian hormone as a substitute for vitamin K growth factor.²

Menstruation: Estrogen levels are at peak two days prior to ovulation. Progesterone secretion reaches its highest concentration after ovulation and gradually falls before menstruation. Progesterone increases permeability of microvasculature, altering the rate and pattern of collagen production in the gingival tissues resulting in tooth mobility. Progesterone also increases folate metabolism, stimulates the production of prostaglandins and enhances chemotaxis of polymorphonuclear leukocytes. These alterations will significantly cause inflammatory changes, resulting in gingival swelling and bleeding. Increase in gingival exudation along with swollen salivary glands may be noticed during menses. Increased levels of progesterone can predispose to intraoral recurrent aphthous ulcers, herpes labialis lesions and candida infections.

Pregnancy: There will be increased secretion of sex hormones due to their continuous production by corpus luteum at the beginning and the placenta afterward. By the end of third trimester, progesterone and estrogen reach the peak plasma levels of 100 ng/mL and 6 ng/mL respectively, which are 10 and 30 times the levels observed during menstrual cycle.³ There is increased plaque accumulation, gingival exudation and increased population of organisms like *P. gingivalis* and *P. intermedia*. Rapidly enlarged, easily bleedable, hyperplastic and nodular tissues called 'pregnancy tumors' or 'pyogenic granuloma' can be noticed in gingival in relation to the anterior teeth; followed by tongue, lips, buccal mucosa and the palate.

Contraception: In women under contraceptives, there is hormone induced changes in bacterial phenotype and their preferential accumulation. Evidence suggests 16-fold higher levels of bacteroides species and 2 to 3 fold increase in incidence of localized osteitis following extraction of mandibular third molars.⁴ There is decrease in concentrations of protein, sialic acid, hexosamine fucose, hydrogen, total electrolytes, changes in salivary flow and increased gingival fluid volume, predisposing to gingivitis and temporomandibular joint abnormalities. Estrogen in oral contraceptives causes variation in coagulation and fibrinolytic factors, leading to greater incidences of clot lysis.

Menopause: As early as 40 years of age, estrogen begins to fall and women notice taste alteration, sensitivity to hot and cold, dryness, burning sensation in mouth, paleness and bleeding gums along with reduced salivary flow. There can be periodontal inflammation and loosening of teeth.⁵ Estrogen deficiency induces cancellous and cortical bone loss in the jaws, destructing the local architecture, thus leading to microfractures and penetrative resorption.

Following are recommendations for women to maintain oral health during reproductive life.

- Replacing the toothbrush every 3–4 months (or sooner if the bristles look frayed).
- Cleaning inter-proximally (between teeth) with floss or interdental cleaner.
- Brushing twice daily with fluoridated toothpaste.
- Periodic professional cleaning.
- Maintaining a balanced diet.
- Regular dental examinations.
- Avoid smoking.

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Contributed by: Dr. Navaneetha Cugati, AIMST University, Malaysia.





‘Oral Physician’s Cognizance towards Antibiotic Prophylaxis’

The dental discipline utilize the service of antibiotics for oral infections pertinent to endodontic, oral surgical and periodontal conditions.^{1,2} Besides the evident indications, oral physicians do encounter perplexing circumstances while prescribing antibiotics.² The endodontic dentistry consumes the aid of antibiotics to a larger extent, when compared with its other tributaries.¹ Apart from its broad coverage, it is failed to be noticed that most of the endodontic contagions do not need the administration of antibiotics, if the causative determinant is sorted. In the heyday dental practice, pulpal and periapical pathologies are the common clinical situations confronted by the oral healthcare professionals.

Former clinical circumstances can be managed with the operative negotiation like root canal manoeuvres, dental fillings, if not removal of the respective tooth when the prognosis is claimed to be poor.¹ Recent analysis vindicate that dentists do prescribe medications for patients who exhibit meagre symptoms in irreversible pulpal inflammation.¹ Antibiotic therapy is recommended, when the patient exhibit an extra oral swelling and the same can be advised considering the medical condition of the patient. Amoxycillin is preferred as the drug of choice among most of the dental experts owing to its broad spectrum activity. Clindamycin and metronidazole score the remaining preferences in dentistry.¹

Privileged clinical situations which require the administration of antibiotics are with regard to the oral surgical manoeuvres that encounter bleeding. Major intra-oral surgical procedures such as orthognathic, hard tissue surgeries performed before initiation of complete denture treatment to enhance the denture bearing area, enucleation of tumours deserve the service of antibiotic prophylaxis.² Extraction of teeth owing to poor prognosis, therapeutic indication and impacted molar is a traditional manoeuvre done in dentistry. Studies pertaining to the pre/ post-operative antibiotic therapy during removal of third molar have received mixed arguments leading to controversies.^{2,3} Recent researchers advocate that the antibiotic prophylaxis during third molar surgery is probably indicated in cases of total osseous impaction and medically compromised individuals.³ Moreover, if the patient shows discomfort/ difficulty in deglutition (swallowing), the alternative (intravenous) route certainly aids the oral clinicians.³ Unfortunately dental surgeons do encourage the administration of antibiotics aftermath the extraction of impacted tooth in healthy patients. Collaterally, dental experts are forced to prescribe antibiotics following implant placement. Numerous analysis and studies conducted in dental implant patients evince that post-operative administration of antibiotics has no significant effects on the success rate of implants.²

Patients with compromised immune system and high risk infective endocarditis deserve to receive antibiotic prophylaxis in routine dental practice with cautious approach. However, It would be advisable to communicate with the medical specialists prior to commencing the dental procedure in patients with compromised immune (renal/ liver/ indwelling catheter, prosthetic devices).^{4,5} Conjointly, illogical application of antibiotics yields to the emergence of Antibiotic Microbial Resistance (AMR).¹⁻⁵ Ineffective utilization of antibiotics by oral clinicians can be attributed to their false positive beliefs and inadequate cognizance with regard to the indications. Nevertheless, the misconception prevailing among the dental practitioners pertaining to the long duration of drugs must be eradicated to avert the growth of AMR.

In certain occasions, patients personally request their oral physicians for additional dosages, which drive the oral healthcare professionals to exercise an unhealthy practice. After the completion of dental manoeuvre, patients should be instructed to adhere to the prescribed regimen and strictly elude the habit of retail purchase. Antibiotics are among the most frequently prescribed drugs by dentists, who can therefore be said to pronominally contribute to the global consumption of antibiotics. Effective and reasonable application of antibiotics is required in dental practice to cure the oral infections and benefit the patients.

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Contributed by: Dr. Ramasamy Chidambaram, AIMST University, Malaysia.



Short Communications

'Hidden Curriculum'

Academician's familiar with OBE, would have a déjà vu, when they come across the abbreviations KSA or ASK (K-Knowledge, S-Skills, A-Attitude). Though all the three domains are important, it is a fact that the knowledge component is assessed more than attitude in any regular examination component.

Of late, OSCEs are adding in attitude assessment rubrics and the 360 degree workplace assessment has its own merits and demerits. Credit hours and face to face time are also assigned to teaching. It is now known that, what is taught is not directly proportional to what the pupils learn.

In fact *Oscar Wilde* has said, 'Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught'.

Apart from the structured curriculum (planned programme of objectives, contents, learning experiences, resources and assessments) that a team of learned men/women take pains to draft, get stake holder consensus, regulatory body's endorsement and benchmark with an international university of repute, there is something else that can influence and educate our students - "The hidden curriculum".

At school, children learn a lot more than is planned. 70 percent of what children learn in school is from the classroom, the other 30 percent is from following school rules and socializing with their friends. This 30 percent is called the hidden curriculum.

The hidden curriculum is the social rules, attitudes and values which children learn from school that are not planned. Children learn to be responsible, attentive, cooperative and considerate at school, but there they might also learn to be selfish, racist, sexist, or to be passive and destructive. All of these ties are very closely related to the ethics of specific communities. A hidden curriculum can produce positive or negative results depending on the viewpoint of a child.¹

The phrase "hidden curriculum" was reportedly coined by *Philip W. Jackson* (*Life In Classrooms*, 1968). He argued that we need to understand "education" as a socialization process. Early in school, we tend to realise without being instructed that science subjects are more 'important' than history for example.

This probably was the, not so hidden aspirations our parents and teachers had planned through us. Some lessons/rules the students learn themselves are as follows (*Joanna Konieczka*, 2013)

When your teacher gives you a warning about behaviour and you continue the same behaviour, you are probably going to get in trouble. If you stop the behaviour immediately after the first warning, you will probably not get into trouble.²

Not all teachers have the same rules for their class. Some teachers do not allow any talking unless you raise your hand. Others may allow talking if you are not disruptive and annoying other students. It is important to know the rules different teachers have for their class. The rules will always change from teacher to teacher and it will not do any good to focus on the fact that it is not fair.

I was fortunate to be able to facilitate an active learning process at an international arena. Cultures and beliefs definitely played a part in the Y gen's process of learning. In contact sports, the Caucasians played to focussing on victory (come what may) whereas the Asians took care of safety (personal and social) first.

Medical schools are beginning to better define, teach, and assess professionalism for students. While there are many positive aspects of medical school training, some students encounter poor modelling, unresolved ethical dilemmas, unnecessary and debilitating academic stresses, and emotional and physical harassment. This may undermine current trend to create programs that develop professionalism in students.³



Continued...

Short Communications

We can describe ways in which certain aspects of the hidden curriculum - specifically, emotional stress created by exposure to unethical behaviour, unreasonable academic requirements, and harassment by supervising physicians - subvert the professional behaviours educators want to teach. We contend that it makes little sense for medical schools to rigorously teach and evaluate professionalism for students when the destructive elements of the hidden curriculum are allowed to go unchecked.⁴ The way we treat medical students is the way they will treat their patients, colleagues, and future medical students. Medical students will do what we do, not what we say.⁴

Attendance, punctuality, dress code, communication skills, team work, leadership, management of information, posts on social media etc. which feature on the national educational blue print can be better educated through the 'hidden curriculum'. Embedding corporate social responsibility, ethics, professional and personal development into the curriculum and hands on experience of these will definitely mould holistic graduates, who are ready to adapt to their working environment and the community. This, in fact was the idea of the ancient gurukulas (residential schools), where the pupil and the guru lived together for the favour of real live education. To get the positive influences of hidden curriculum, parents and teachers need to be good living examples. When the kid asks a question like 'mum, how come the idiots cross the road, only when dad is driving?' - it should send a panic signal of realisation that they are being exposed/educated by the hidden curriculum.

When Priyanka Chopra was asked how all Ms. India pageant winners could adapt to acting, she said everyone is taught to act as a child. This could be the hidden curriculum ensuring 100% employability, the close the OBE way.

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Contributed by: Prof. Dr. P. K. Rajesh, AIMST University, Malaysia.



New Drugs Updates

'A Summary on New Drugs Approved by the U.S. FDA'

The U.S. Food and Drug Administration (FDA) on April 29, 2016 approved the first generic version of rosuvastatin calcium (Crestor) tablets to be used in combination with diet for the treatment of adults with hypertriglyceridemia, and patients with primary dysbetalipoproteinemia (Type III Hyperlipoproteinemia).¹ It is also specified to be used either alone or in combination with other cholesterol treatment/s for adult patients with homozygous familial hypercholesterolemia.¹ Rosuvastatin is a HMG-CoA reductase inhibitor drug. The most common adverse effects of Crestor include headache, myalgia (pain in muscles), abdominal pain, abnormal weakness and nausea.¹

The U.S. FDA on April 29, 2016 approved pimavanserin (Nuplazid) tablets. It is the first drug approved for the treatment of hallucinations and delusions associated with psychosis experienced by some patients with Parkinson's disease.² Pimavanserin has been reported to be a selective inverse agonist of 5-hydroxytryptamine 2A (5-HT_{2A}) receptor intended to treat patients with Parkinson's disease psychosis (PDP).³ The most common adverse effects of Nuplazid noted in clinical trials were peripheral edema (swelling of the ankles, legs and feet); nausea; and confused/abnormal state of mind.²

The U.S. FDA on May 18, 2016 approved atezolizumab (Tecentriq) for the treatment of the most common type of bladder cancer, called urothelial carcinoma.⁴ Tecentriq is the first PD-L1 inhibitor approved by the FDA.⁴ The most common adverse effects associated with the treatment of Tecentriq were fatigue, decreased appetite, nausea, urinary tract infection, fever and constipation. In addition, Tecentriq has a potential to cause infection and serious side effects that result from the immune system effect.⁴

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Contributed by: Dr. Pitchai Balakumar, AIMST University, Malaysia.



Short Communications

‘Scope of Electrical and Electronics Engineering’

The profession of engineering takes the knowledge of mathematics natural sciences gained through study, experience, practice and applies this knowledge with judgment to develop ways to utilize the materials and forces of nature for the benefit of mankind.

The first Electrical Engineer was graduated from Cornell University (US) in 1885. Electrical engineering is the largest branch among engineering representing about 31% of graduates entering globally. Because of the rapid advances in the technology associated with electronics and computer science, this branch of engineering is growing faster. The field of electrical engineering is strengthened and reinforced by philosophies and inventions of scientists such as *Michael Faraday, George Simon Ohm, James Clerk Maxwell, Thomas Alva Edison, Nicola Tesla* and *Oliver Heaviside*, etc. This branch of engineering is not only lighting the entire world but also forms the base for electronics, micro and nano electronics, communication, control and mechatronics engineering.

In general electrical and electronics engineering may have core courses such as electromagnetic field theory, electronic devices, electrical circuits, signals and systems, electrical machines, measurement and instrumentation, automation systems, power electronics and power systems, high voltage engineering, digital signal processing etc. In addition courses such as embedded systems, VLSI design, robotics and automation, biomedical instrumentation are also taught as elective courses.

Almost every minute of our life, we depend on communication equipment developed by electrical engineers. Nation's defense system depends on communications engineer and on the hardware used for our early warning and detection system. After graduation, electrical and electronic engineers are placed in power generation and utilities, construction, oil and gas industries and semiconductor industries.

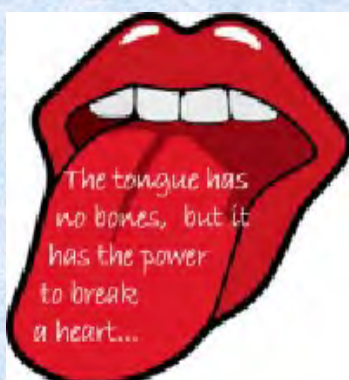
Greater strides have been made in the control and measurement of phenomena that occur in all types of processes. Physical quantities such as temperature, flow rate, stress, voltage and acceleration are detected and displayed rapidly and accurately for optimal control of processes.

Furthermore they have plenty of opportunities in project management, quality management and reliability engineering and automation industry. Energy engineering is another sub topic of electrical and electronics engineering which deals with not only energy generation, also energy utilization, green energy buildings and Heating Venting and Air Conditioning (HVAC).

Students who wish to study this course should be good in mathematics and physics. Mathematics is the language for engineers and scientists. This point is stressed since the interest of present generation students in learning mathematics and science is coming down. This is very dangerous for the scientific society.

The recent study in Malaysia shows that decline in students who are choosing the courses in science, technology, engineering and mathematics (STEM). Global employment opportunities and demand for electrical and electronic engineering is almost steady since 75 years. Students who are eager and study with involvement will have bright future.

Contributed by: Mr. Raman Raguraman, AIMST University, Malaysia.



Mind Your Tongue

Speak the Truth
Speak not without Proof
Speak Justice
Speak straight
Speak fairly
Speak gently

Speak politely
Speak kindly
Speak graciously
Speak no lie
Speak no slander
Speak not in vain
Speak not to backbite

‘Nanodentistry: The Minuscule Cure’

The last decade observed the supreme growth in the arena of research related to healthcare system. Amongst these researches, nanotechnology has displayed immense potential, to progress in the field of medicine. Nanotechnology has revolutionized healthcare sector into a new paradigm of state-of-the-art patient care beyond customary standards.

The concept of nanotechnology was first laid out in 1959 by the noble prize winning physicist, **Richard Feynman**. In his historic lecture, **“There’s plenty of room at the bottom”**, he concluded saying, “This is a development which I think cannot be avoided”. Since then, nanotechnology has come a long way to find its application in supramolecular chemistry-self assembling drug carriers and gene delivery systems, nanoparticles and nano-capsules, antibody technologies, polymer-drug conjugates, polymer-protein and antibody conjugates, instant pathogen diagnosis and extermination, individual cell surgery *in-vivo*, nano-precipitation, nanocrystals, emulsification technologies, liposome technology, *in-situ* polymerization, tissue engineering and repair, molecular imprinting including recent innovations in dental diagnostics, material and therapeutics.¹

Nanomedicine and nanodentistry can be defined as a science and technology of diagnosing, treating and preventing diseases, preserving and improving human health, using nanoscale structured materials. It has been proposed that nanodentistry is promising at maintaining a near-perfect oral health through the use of nanomaterials, biotechnology and nanorobotics. Nano, means **‘dwarf’** in Greek and is 1 billionth or 10^{-9} of a meter. Nanotechnology is about manipulating matter, atom by atom which includes nanorobots that are of nanoscale materials. Using atomic force microscopy techniques, diseases such as dental caries, tooth hypersensitivity and oral cancer can be quantified based on morphological, biophysical and biochemical nanoscale properties of tooth surface itself and dental materials or oral fluids such as saliva. Using nano characterization tools, a variety of oral diseases can be understood at the molecular and cellular levels and thereby prevented. Nano-enabled technologies thus provide an alternative and superior approach to assess the onset or progression of diseases, to identify targets for treatment interventions as well as the ability to design more biocompatible, microbe resistant dental materials and implants.²

Numerous other potential treatment opportunities in dentistry includes local anaesthesia, dentition renaturalization, permanent hypersensitivity cure, complete orthodontic realignments during a single office visit, covalently bonded diamondized enamel and continuous oral health maintenance using mechanical dentifrobots to destroy bacteria in the mouth that cause dental caries or even repair spots on the teeth where decay has set in, by use of computer to direct these tiny workers in their tasks. Dental nanorobots might use specific motility mechanisms to crawl or swim through human tissue with navigational precision, acquire energy, sense and manipulate their surroundings, achieve safe cyto-penetration and use any of the multitude techniques to monitor, interrupt or alter nerve impulse traffic in individual nerve cells in real time. These nanorobot functions may be controlled by an onboard nanocomputer that executes preprogrammed instructions in response to local sensor stimuli. Alternatively, the dentist may issue strategic instructions by transmitting orders directly to *in-vivo* nanorobots via acoustic signals or other means. Prospective applications of nano-technology in tissue engineering and stem cell research in dentistry include the treatment of orofacial fractures, bone augmentation, cartilage regeneration of the temporomandibular joint, pulp repair, periodontal ligament regeneration, and implant osseointegration.³

Nanotechnology can revolutionize dentistry, healthcare and human life more profoundly than many developments of the past. Molecular technology is destined to become the core technology underlying all of the 21st century medicine and dentistry. Sadly as with all technologies, nanotechnology also possesses tremendous potential, but has to be cleared for ethical regulation and human safety as it carries a significant potential for misuse and abuse on a scale never seen before.

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Contributed by: Dr. Shilpa Hiremath, AIMST University, Malaysia.



Short Communications

‘Telomeres: The key to be healthy, long-life’

A telomere is a region of repetitive nucleotide sequences at both ends of chromosome, which prevent chromosomes from becoming frayed, fusing into rings, or binding with other DNA. For imagination purpose, telomere is like the plastic tips on the end of a shoelace. In human cell, there are 46 strands of DNA which are coiled into chromosomes. Every time, when cells undergo division a bit of that cap is lost. This shortening of telomeres continues as we age and the time comes when telomere is completely gone and hence we die. **Dr. Elizabeth Blackburn** was awarded the 2009 Nobel Prize in Medicine for her discovery of telomerase. Forensic scientists can estimate the age of a person by measuring the length of telomeres in DNA.^{1,2}

The two oldest trees are Bristlecone Pine trees in Nevada and Prometheus in California (4800 years old). Researches show that the trees with more telomerase activity live for longer time. With high telomerase activation, it is possible for the tree to live for 2000 to 5000 years. Tree telomeres have seven base pairs repeating (TTTAGGG) when compared to six in Humans (TTAGGG).³

Ronald A. DePinho, a Harvard medical school professor of genetics, restored the telomerase of old rats gene and after few weeks, he observed reversing age pattern in rats as their brain size was getting bigger, their fur were regrown, and started to smell again.⁴

TA-65® is a patented, all natural, plant-based compound which can help maintain or rebuild telomeres that diminish as people get older. The active constituent of **TA-65** was obtained from the herb *Astragalus membranaceus* and later patented by Geron, a biopharmaceutical firm in Menlo Park, California. Later there was Lawsuit challenges anti-ageing claims which was published in Nature journal.⁵

Telomeres and life style: Smoking cigarettes enhance and triple the rate of telomere loss. Even the foods have an impact on telomeres loss. Eating fruits, vegetables and other antioxidant-rich super foods is found to have protective and lengthening effects on telomeres whereas, taking fizzy drinks, meat, fish, refined grains, and dairy has been interrelated to shortened telomeres.¹ Decreased length of telomere has been linked with coronary heart disease, hypertension, heart failure, diabetes and some forms of cancer and this shortening of telomeres were found to be associated with a reduced intake of vegetables and fruits.⁶

Telomerase and immortality of cancer cells: In cancers, as a cell divides more often, its telomeres become short in due course which may lead to cell death. However, these cells escape death by making more telomerase enzyme, hence cancerous cells become immortal. Many cancers have shortened the telomeres, involving pancreas, bone, prostate, bladder, lung, kidney, head and neck. Measuring the telomerase could be one of the approaches to detect cancer.⁷

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Contributed by: Dr. Mukesh S. Sikarwar, AIMST University, Malaysia.



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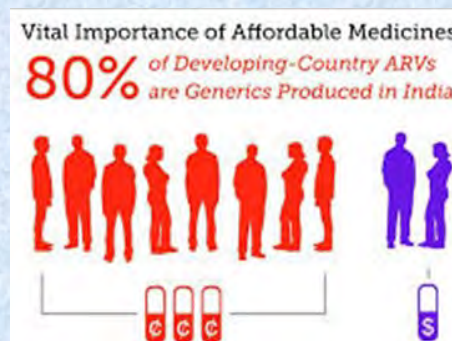
Figure-2 cited is for information purposes only³



'Compulsory Licensing (CL): A Portal to Accessibility and Affordability of Medicines'

Patents are granted to instigate and fortify inventions and establish commercial exploitation to ensure that the patentee should not abuse the rights by enjoying the monopoly for the importation of patented article. The Patent Act provides the provision of compulsory licensing to ensure that the patents do not hamper the protection of public health and nutrition and that the patent rights are not misused by the patentee.

The compulsory license therefore serves to smack a balance between two conflicting objectives –gratifying patentee for their invention and making patented product specially pharmaceuticals accessible to large population in developing and least developing countries at a cheaper and affordable prices.¹



Grant of compulsory licensing under Section 48 to 54 of Malaysian Patent Act:²

Any interested person, under Section 49 of the Malaysian Patent Act, may make an application for the grant of compulsory license three years after the grant of patent on the following grounds:

When there is national emergency or where the public interest, in particular, national security, nutrition, health or the development of other vital sectors of the national economy as determined by the Government.

- Where there is no manufacturing of the patented product or application of the patented process without any legitimate reason; since there is no product produced in Malaysia under the patent for sale in any domestic market, reasonable requirements of the public have not been satisfied.
- patented invention is not available to the public at a reasonably and affordable price due to seldom production or
- Patented invention is not worked in the territory of Malaysia.

Thus, compulsory licensing allows a government to temporarily revoke a patent. This allows generic version of a patented product to be produced domestically or imported, with compensation paid to the patent holder.

Though after the Doha Declaration on the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement and public health, around 52 countries have issued CLs (Brazil, India, China, Thailand, Malaysia, Korea, Taiwan, Israel and Africa as WTO member countries).³ The Paragraph 6 of Doha provision allows a generic drug maker to manufacture and export a patented drug to a country with insufficient or no manufacturing capacity in the pharmaceutical sector.

In the landmark move, Malaysia became the first country to issue a compulsory license in 2003 following the adoption of the Doha Declaration on TRIPS and Public Health by the 2001 Ministerial Conference of the World Trade Organization and authorized local manufacturer Syarikat Megah Pharma & Vaccines to hold a license to import four anti-retroviral HIV/ AIDS formulations as follows:⁴

1. Didanosine 100 mg tablet (patent holder: Bristol-Myers Squibb)
2. Didanosine 25 mg tablet (patent holder: Bristol-Myers Squibb)
3. Zidovudine 100 mg capsule (patent holder: GlaxoSmithKline)
4. Lamivudine 150 mg + Zidovudine 300 mg tablet (patent holder: GlaxoSmithKline) from Indian generic drug manufacturer (Cipla)

Now the average cost of MOH treatment per month per patient declined from USD 315 to USD 58, equivalent to about an 81% reduction, when generic drugs were used. The number of patients who could be treated in government hospitals and clinics increased from 1,500 to 4,000.

Continued...

Short Communications

India's scenario on compulsory licensing:

India is the world's third-largest pharmaceutical drug producer by volume; in 2015 the domestic pharmaceutical market reached a record US \$14 billion in sales. Patents on pharmaceutical products in India have been under the floodlight as Swiss drug manufacturer, Novartis fights the rejection of a patent on cancer drug '*Glivec®*' on the grounds that it is not sufficiently innovative under Section 3(d) on Indian Patent Act.



Bayer's plea against CL was rejected on the following grounds:

1. Bayer supplied the drug to only 2% of the patient population; the reasonable requirements of the public with respect to the patented drug (Nexavar®) under section 84 of Indian Patent Act were not met.
2. Bayer's pricing of the drug (2.8 lakhs for a months' supply of the drug) was exorbitantly high and did not constitute a "reasonably affordable" price.
3. Bayer did not sufficiently "work" the patent in country's territory.

With the above mentioned clauses Controller General of India allows Natco Pharma to manufacture and sell a generic version of Nexavar®, by paying 6% of royalty on the net sales (every quarter) to Bayer with the drug costs of Rs 8800/monthly dose (120 tablets) in its compulsory licensing application. Thus, the Indian Patent Office has issued its first compulsory license to a domestic generic drug-maker Natco Pharma Limited for Bayer AG's Nexavar®, a kidney/liver cancer drug that goes by the generic name of Sorafenib Tosylate.⁵

This milestone decision benefitted 2.5 million cancer patients in India, may also prompt other countries particularly the developing countries to ratify similar provisions and issue similar orders.

Compulsory licensing moves in Africa:⁶

South Africa: On 7 March, 2001 Cipla petitioned South Africa to issue compulsory license on nevirapine, lamivudine, zidovudine, didanosine for the treatment of HIV against Glaxosmithkline, South Africa Pvt. Ltd and Boehringer Ingelheim for excessive pricing and granted three licenses to Aspen Pharmacare to permit the licensees to export the medicine to Sub Saharan African countries.

Zimbabwe: On 24 May, 2002 the Ministry declared emergency period of six month to allow the authority to make, use or import generic HIV/AIDS medicines.

Compulsory licensing proved to be an important tool for achieving a balance between the interest of pharmaceutical innovators and patients which entail the careful weighing of moral, legal, economic and public health consideration.

Ghana: On 26 October, 2005 the Minister of Health declared an emergency situation with regards to HIV/AIDS medications in Ghana and approved the importation of generic HIV/AIDS medicine into Ghana.

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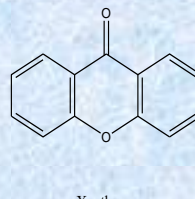
Contributed by: Ms. Payal Bhatnagar, AIMST University, Malaysia.



'Xanthenes Scaffolds from Nature (Garcinia)'

The natural sources of xanthenes scaffolds are confined mainly to the *Garcinia* genus. Several *Garcinia* xanthenes were reported for a plethora of activities¹ and most of them are cytotoxic caged xanthenes. *Garcinia atroviridis* (Malay: Asam Gelugur, Asam Gelugor) is Malaysian herb belonging to the family Guttiferae. The sun-dried slices of the fruits are commonly used in the seasoning of curries, sour relish and fish dishes.

G. atroviridis is traditionally used among the Malay population as a post-partum medication, to treat earache, throat irritation, cough, dandruff, and stomach pains associated with pregnancy. The



Fruits of *G. atroviridis*

fruits are rich in organic acids and hydroxy citric acid (HCA) is the major acid proven to decrease the body-weight gain. Atroviridin is a pyranoxanthone class of organic compounds available in the stem bark and is well-known for its anti-cancer effects.

Bioactive compound 1, 3, 7-trihydroxyxanthone isolated from the stem bark possess antioxidant activity.² Garcineflavanone A (triflavanone) and Garcineflavonol A (biflavonol) from stem bark are known for its acetylcholinesterase inhibitory effect.³ Hence, the beneficial effect of fruits on memory and cognitive disorders could be explored. The acid esters present in the fruits give the plant some antifungal activity. Two compounds with a unique β -lactone structure were isolated, of which one was most likely an artefact of Garcinia acid (HCA). Though *Garcinia* xanthenes are reported for its wide biological activity, it is surprising that none has an established use in medicine. Till date, only a few literatures are available on the atroviridin isolation or synthesis.⁴ Design, synthesis, and screening of novel *Garcinia* xanthone derivatives will provide further research directions and scientific evidence for the medicinal use of xanthone scaffolds for therapeutic purpose against various health conditions.

References:

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2. Tan WN, Khairuddean M, Wong KC, et al. Antioxidant compounds from the stem bark of *Garcinia atroviridis*. J Asian Nat Prod Res. 2016;18:804-11.
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4. Suzuki Y, Fukuta Y, Ota S, et al. Xanthone natural products via N-heterocyclic carbene catalysis: total synthesis of atroviridin. J Org Chem. 2011;76:3960-7.

Contributed by: Dr. Sridevi Chigurupati, AIMST University, Malaysia.



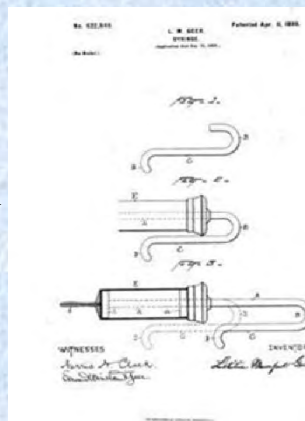
Do You Know?

The combination of a cylinder, a piston and an operating-rod which is bent upon itself to form a smooth and rigid arm terminating in a handle, which, in extreme positions, is located within reach of the fingers of the hand which holds the cylinder, thus permitting one hand to hold and operate the syringe.¹

The Medical Syringe was invented by *Letitia Geer*³ of New York in 1899. She was granted a patent for 'in a hand syringe'.

References:

1. Amazing inventions by women. Available at: www.factmonster.com/ [Last accessed on 02/07/2016].
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3. Image available at <http://www.rediff.com/getahead/report/achievers10-amazing-inventions-by-women/20160614.htm> [Last accessed on 02/07/2016].



Contributed by: Mr. Abdul Nazer Ali, AIMST University, Malaysia.

Awards & Achievements

‘SMTT Innovation Challenge Trophy’ ‘Poster Presentation Contest on Conceptual Idea’

SMT Technologies Innovation Challenge Trophy was jointly organized by SMT Technologies and AIMST University on 19th May 2016 to close the gap between the industry and academia and also to promote innovations in academic research. The competition was focused to motivate, encourage and celebrate valuable innovations in the global market and award conceptual ideas that address the current and future needs of equipment's in our daily life, especially solutions to the challenges in the fields of medicine, dentistry, pharmacy, healthcare, biotechnology, engineering and education that positively impact the global economy and ease the daily life of common people.



Mr. PK Kang Alex, Group CEO & Executive Director, SMT Technologies with Prof. Ravichandran Manickam, Vice Chancellor & CEO, AIMST University and participants.

Awards

The following were won by the participants from AIMST University for their outstanding conceptual ideas.

Best Innovator

Joan Lim Jia Zuan, FECT, AIMST University for her excellent concept on Polyfacet, a supporting wheel chair for the disabled.



First Runner Up

Namani Srilahari, Saravana Selvan, Douglas Ling Jit Shen, Cheng Tsu Yang, Suen Wei, FECT, for her concept on S Band. Its time to care, its time for a change.



Second Runner Up

Leng May Hue, FECT, for her concept on aquaponic gardening.

Contributed by: *Mr. Girish Kumar, AIMST University, Malaysia.*

Awards & Achievements

Sen. Assoc. Prof. Dr. V. Ravichandran, Faculty of Pharmacy, AIMST University has received ‘Young Scientist Award – Pharmacy’, Aufau International Award 2016, Awarded by Aufau Periodicals, on the 4th June, 2016 at Hotel Silver Palace, Salem, India.



Awards & Achievements

BDS students from Faculty of Dentistry, AIMST University emerged as Champions in National Dental Intersarsity Sports Carnival, 2016 with three gold's, one silver and one bronze medal held at USM Penang on the 2nd and 3rd April, 2016 hosted by Penang International Dental College.



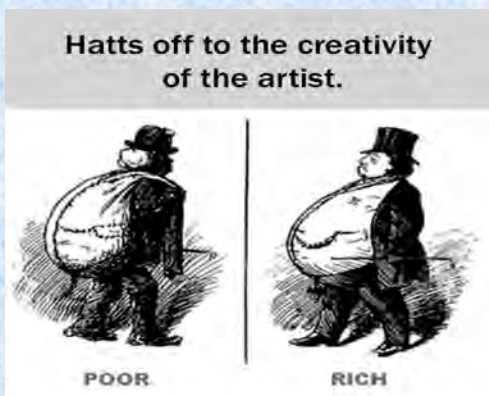
MVP (MALE) : ONG WEI SHEN (USM)
MVP (FEMALE) : NG ROU ENN (USM)

NDISC 2016 SCOREBOARD

PLACINGS	DENTAL INSTITUTE			
1.	AIMST UNIVERSITY	3	1	1
2.	USM	2	3	2
3.	PENANG International Dental College	2	2	2
-	UNIVERSITI TEKNOLOGI MARA	2	2	2
5.	UNIVERSITI KEBANGSAAN MALAYSIA	1		1
-	UNIVERSITI SAINS MALAYSIA	1		1
7.	NEGI University College	1		
8.	UNIVERSITI ISLAM MALAYSIA		2	1
9.	Melaka Manipal Medical College, Malaysia		1	1
10.	MAHSA UNIVERSITY COLLEGE			1
-	UNIVERSITI MALAYA			1
12.	LINCOLN UNIVERSITY			
-	IMU			



Ms. Samantha Wee, year 5 BDS student from FOD, secured the first prize in the Intersarsity Prosthodontic competition 'Bridging the Gap' organized by 3M-ESPE-Malaysian Association for Prosthodontics (MAP) on 15th May, 2016 in conjunction with the 8th National Dental Student's Scientific Conference, held at Universiti Sains Islam Malaysia (USIM), Nilai. She was guided by Dr. Ajay Jain.



Ms. Theam Jing Yi, year 5 BDS student from FOD, won the consolation prize at the 1st Aesthetic Challenge - 2016, Young Clinicians Competition on 14th May, 2016 organized by Malaysian Association of Aesthetic Dentistry at Hotel Pullman, Kuala Lumpur. She was guided by Dr. Rahul Rathi.

Contributed by: Dr. Rahul Rathi, AIMST University, Malaysia.



University Events

'3rdRC4Bs-2016'

The **3rd Regional Conference on Biosensors, Biodiagnostics, Biochips and Biotechnology - 2016 (3rdRC4Bs-2016)** was held in **AIMST University** during April 20-22, 2016. It was organized by Faculty of Applied Sciences, AIMST University, Malaysia in collaboration with **King Mongkut's University of Technology Thonburi, Thailand; Universiti Malaysia Perlis, Malaysia, and Universiti Teknologi MARA, Malaysia.**

The event was supported by the **Malaysian Biotechnology Information Center (MABIC), Malaysia; ScientiaBio, Bangalore, India; and Academy of Sciences Malaysia (ASM), Malaysia.** The theme of the conference was **'State-of-the-Art Achievements and Challenges in Biosensors, Biodiagnostics, Biochips and Biotechnology'.**

There were 2 keynote talks, 14 plenary talks, and 39 oral presentations.

YBhg. Dato' Prof. Dr. Asma (Director General, Department of Higher Education, Ministry of Higher Education, Malaysia) and Prof. Eiichi Tamiya (Osaka University, Japan) delivered keynote address.

Assoc. Prof. Dr. Bent Petersen, Department of Systems Biology, Technical University of Denmark, Denmark; Assoc. Prof. Dr. Werasak S., KMUTT, Thailand; Snr. Prof. M. Ravichandran, AIMST University, Malaysia; Dr. T. Theivasanthi, International Research Center, Kalasalingam University, India; Prof. Dr. Prakash Kumar, NUS, Singapore; Prof. Dr. Phua K.K., USM, Malaysia; Prof. Aziz Amine, Hassan II University of Casablanca, Morocco; Dr. Subash C.B. Gopinath, Universiti Malaysia Perlis (UniMAP), Malaysia; Prof. K Sudesh Kumar, USM, Malaysia; Dato' Prof. Dr. Mohd Zaki Salleh, UiTM, Malaysia; Prof. J. F. F. Weber, UiTM, Malaysia; Prof. Quamrul Hasan, JAHARI, Osaka, Japan; Assoc. Prof. Dr. Md. Latiful Bari, University of Dhaka, Bangladesh; and Prof. Dr. Anwar, University of Dhaka, Bangladesh delivered plenary talks.



The two, one day 'preconference workshops', Workshop-1: "Drug-Protein Interaction and Personalized Medicine" was conducted by Ms. Monisha Hajra, ScientiaBio, Bangalore, India, and Workshop-2: "Basic Statistics using Microsoft Excel and SPSS" & "Basic Concept of Effective Scientific Communications" was conducted by Snr. Assoc. Prof. Dr. K. Marimuthu and Snr. Assoc. Prof. Dr. P. Balakumar, AIMST University, Malaysia.

Conference opening session was witnessed by about 750 individuals including participants, staff and students of AIMST University. In total, 238 participants, 55 speakers and 49 poster presentations from various institutions of 13 countries participated in the 3-days event.

The glorious success of the conference was only possible because of the hard and dedicated efforts of the organizing committee members who deserve appreciation for their hard work.

Contributed by: Dr. Subhash J Bhore, Chairman, The 3rd Regional Conference on Biosensors, Biodiagnostics, Biochips and Biotechnology 2016, AIMST University, Malaysia.



‘Quality Use of Medicine Campaign (QUMC)’

The **Quality Use of Medicine Campaign (QUMC)** was successfully conducted by **AIMST Pharmacy Students Association (PharmSA)** under the guidance of Faculty of Pharmacy in collaboration with **Kuala Muda District Health Department, National Anti-Narcotic Agency (AADK) and Kedah Pharmacy Enforcement Unit**. The objectives of this campaign was to raise awareness regarding the use of medicines, cosmetics and supplements among university students; to provide advice and guidance about the rationale, safe and quality use of medicines, cosmetics and supplements among university students so that they will be able to make the right decision in the rational drug use; and lastly, to encourage the students to take part in activities pertaining to the quality use of medicines.

This activity lasted for three days, from 25th May to 27th May, 2016. Exhibitions and talks were among the activities carried out during the campaign. Exhibition lasted for three days and was located at the University’s Café Foyer. Meanwhile, talks and Q&A session held on 26th May, 2016 (Thursday), from 9 am to 12 pm at the Universities Medical building received an overwhelming response with 150 students from pharmacy program and Foundation Studies of AIMST University.

The event was officiated by Professor **Dr. Mohd. Baidi Bahari**, DVC (Research, innovation and infrastructure) and Dean, Faculty of Pharmacy. Guests of honour present for the occasion were **Snr. Assoc. Professor Dr. Kaveti Balaji**, DVC (Student affairs), **Snr. Assoc. Professor Dr. Kasi Marimuthu**, DVC (Academic and International Affairs), Assistant Registrars Miss Sumathi and Mr. Anthony Tee, Representatives from Ministry of Health, Malaysia and lecturers from Faculty of Pharmacy.

Posters regarding the rights of consumers while getting their medicines and proper use of medicines were exhibited. Ways to use ‘**meditag**’ decoder, ways to identify genuine medicine from counterfeit medicine and ways to use certain medical devices were also demonstrated at the exhibition booths. There was also exhibition on illicit drugs that are commonly found and abused in Malaysia by **National Anti-Narcotic Agency (AADK)**.

This campaign officially ended at 4 pm on 27th May, 2016 and it is strongly believed that the objectives of this campaign were achieved. The organizing committee would like to record their appreciation to the University Management for their kind support throughout the campaign as well as representatives from Ministry of Health (Kuala Muda District Health Office and Kedah Pharmacy Enforcement Unit) and National Anti-Narcotic Agency (Kuala Ketil Branch) for their willingness to participate and their contributions for the event.



Opening ceremony of the campaign



Inaugural speech by
Prof. Mohd. Baidi Bahari,
Dean, FOP.



Q&A Session



Q&A Session with Mr. Mokhtar,
Senior Principal Assistant Director of
Kedah Pharmacy Enforcement Unit



Exhibition booths



Contributed by: Mr. Ng Yen Ping, AIMST University, Malaysia.



University Events

'PBL Facilitation Workshop – Faculty of Medicine'



The objective of this workshop was to conduct a post-mortem of the PBL process that we follow in our MBBS curriculum and to get the faculty consensus on standardising the overall PBL process for both the clinical and non-clinical courses of the faculty and at large synchronize the process for other faculties of the university.

There were 55 participants for the Phase I Workshop from the faculty of medicine, pharmacy and applied health sciences, and had an in-depth discussion to understand the awareness, concerns/issues and possible/feasible solutions to address the following:

- Are students benefitting from PBLs?
- Are they seeking the right information?
- Are we doing it right?
- SWOT of the PBL process we are currently following.

The general consensus arrived was

1. PBL process should be standardised and made uniform across the curriculum.
2. Facilitator training workshops are required to increase the pool of well-trained facilitators.



The Phase II Workshop on 29th July, 2016 was taken through by Prof. Debra Sim, Professor of Pharmacology, Universiti Malaya and a PBL expert. A mock PBL was demonstrated. This was followed by group discussions on the common challenges encountered by the facilitators during a PBL session.

The medical education unit thanks the management for supporting and encouraging our desire to hold such workshops. We are indebted, to Sen. Assoc. Prof. Dr. Marimuthu, DVC (Academic & International Affairs), Prof. Baidi Bahari, DVC (Research and Infrastructure) and Sen. Assoc. Prof. Dr. Kaveti Balaji, DVC (Student Affairs), for inaugurating both the phases of workshop. The Dean, FOM, Prof. T. Pandurangan concluded the proceedings with his summarising speech and vote of thanks on each occasion.

Workshop in pipeline:

PBL case drafting workshop

Involving hospital doctors for the standardization of the teaching/assessment protocol on clinical history and general examination of patients.



Thanks abound to the enthusiastic organising committee and all the participants for making this event possible and success.

Contributed by: Prof. Dr. P. K. Rajesh, AIMST University, Malaysia.



University Events

'Old Folks Home Visit – A Community Service Project'

The final year pharmacy students successfully organized a community service project to three old folk homes located around Sungai Petani, Kedah. These activities were carried out on Friday, the 13th May 2016 from 9 am to 12 noon at Pusat Jagaan Ming Yuet Senior Citizen Home, Pusat Jagaan G (Warga Tua Berkediaman) and Kebajikan Kasih Malaysia, respectively. A total of 100 students in this cohort were divided into three groups and each group assigned to one of the three mentioned old folks homes. One lecturer took charge of each group to provide guidance. Approval for the visit was obtained from Pejabat Kebajikan Masyarakat Daerah Kuala Muda.



Pusat Kebajikan Kasih Malaysia



Blood Pressure Monitoring

The objectives of the activities were to expose the students to public health activities, inculcate social responsibilities, promote rationale use of drugs and improve counselling skills. Basic health screening exercises like blood pressure monitoring, blood sugar screening and body mass index measurements were carried out by the students. The pharmacy students took this opportunity to perform home medication reviews, provide advices on proper storage of drug and identify any pharmaceutical care issues involved. Apart from this, cultural events were performed by students which included singing and dancing to cheer up the elderly. Essential items such as rice, crackers, adult's diapers, Milo®, oats, mugs and old clothes were raised and donated to these three old folks homes.



Students conducting medication review



BMI & Waist Circumference Measurement



Blood Sugar Screening



Pusat Jagaan G



Continued...

University Events

Students who participated in this event enjoyed the various activities and gained experience on how to provide proper care to geriatric patients. Students worked as a team and appreciated its importance in a healthcare setting. In conclusion, these activities provide a good opportunity for the pharmacy students to gain motivation and experience in community service and thereby establish new relationship with the local care centres. With this project our students have realised and conveyed a strong message to the old folks in the homes **‘When life gives you a hundred reasons to breakdown and cry, show life that you have thousand reasons to smile and laugh’** - STAY STRONG AND BE HAPPY dear old folks.



Students' performance



Pusat Jagaan Ming Yuet



Contributed by: **Mr. Ng Yen Ping**, AIMST University, Malaysia.

University Events

‘Continuous Professional Development (CPD) Programme’

The CPD and Seminars Committee, FOP organized a one day seminar on the title **‘Advances in Pharmaceutical Care and Pharmaceutical Industry’** on the 3rd June, 2016. **Hj. Baharuddin Bin Baba**, Senior Principal Assistant Director, Pharmacy Practices and Development, State Health Department, Kedah state, Malaysia shared the updates on ‘Current status of Pharmaceutical Care in Malaysia’. **Mr. Sarghunam Pasupathi**, Production Pharmacist at Ranbaxy Malaysia Sdn. Bhd., a SUN PHARMA company shared his views on ‘The Pharma Industry in Malaysia & the Market Expectations’ and **Ms. Geetha Ganesh**, Director, MEDRA+, Pte Ltd, Singapore shared her views on ‘Emerging trends of Global Regulatory Affairs’. The one day seminar was awarded 6 CPD points. There were about 150 participants including students, staff (Pharmacy, Medicine, Dentistry) and pharmacists from Hospital Sultan Abdul Halim.



Participants from Hospital Sultan Abdul Halim, Invited Speakers and CPD Organizing Committee



Participants with the speakers

Contributed by: **Dr. Shalini Sivadasan**, Chair-Person, CPD Committee, Faculty of Pharmacy, AIMST University, Malaysia.



University Events

‘Psychological Health & Well-Being Programme’

AIMST Counseling & Advisory Service Unit (C.A.S.U), as part of its “Psychological Health & Well-Being Programmes” invited an international speaker Ms. Judy Johnson from Halifax, Canada for a talk at AIMST University on 8th June, 2016.

Ms. Johnson is a member of Brahma Kumaris, Canada and was on education tour throughout Malaysia. She is a motivational speaker and an expert in “Leadership Development & Organizational Effectiveness.” She delivered a talk on “Tools to Integrate Values in Education” to medical students.

She spoke mainly on managing stress, being resilience, personal responsibilities, followed by a workshop; a practical session on activating positive energy to be resilient and induce well-being and happiness.

**‘International Day of Yoga’**

AIMST Counseling & Advisory Service Unit (C.A.S.U) organized “**International Day of Yoga**” on 15th June 2016 to promote well-being & happiness. Volunteers from Isha Foundation Malaysia, conducted a 60 minutes session by teaching “Upa Yoga” as part of their nationwide free workshop in conjunction with “International Day of Yoga.” Upa Yoga is a 5 minute yoga to immediately re-energise the body and mind. Its practical session was very effective and Upa Yoga offers immense benefits by uniting the body, mind and breath.



Contributed by: Ms. R.T. Letcime, AIMST University, Malaysia.

University Events

'The Central Dogma of AIMST staff club Gala Night Cultural Events, 2016 - Faculty of Pharmacy'

"We all have become fans of FOP" was the most predominant feedback received from the audience who witnessed our performance during the recently concluded AIMST Staff Club Gala Dinner cultural events, 2016. Yearly once, AIMST Staff club organizes staff cultural events followed by dinner party. The idea of organizing such events is to have a happy get-together among university staff members and their families. The Faculty of Pharmacy performed a variety of entertainment which included sports action sequences, fashion show and group dance. Our performance was highly appreciated from every section of the audience with positive feedback.



Making of the FOP event; Behind the Scene.

Contributed by: Dr. P. Vasanth Raj, AIMST University, Malaysia.

Upcoming Events

'GCP Wrokshop'

CPD and Seminars committee, Faculty of Pharmacy in collaboration with Clinical Research Center (CRC), Hospital Sultan Abdul Halim is organising the Good Clinical Practice (GCP) Workshop from 24-26 August 2016 at AIMST University. Interested participants can register for the workshop on or before 27th July, 2016.

Seminar Details

Date: 24-26 August 2016

Venue: AIMST University

Registration fees: RM 550

Organised by: CPD and Seminars committee, faculty of Pharmacy in collaboration with Clinical Research Center (CRC), Hospital Sultan Abdul Halim

Last date for Registration: on or before 27th July, 2016

Register @ cpdfop@aimst.edu.my

For further details contact at cpdfop@aimst.edu.my or 04-4298000 Ext: 8010

Contributed by: Dr. Shalini Sivadasan, AIMST University, Malaysia.



Upcoming Events

GREAT MINDS, 3 MINUTES, 1 DAY



FALLING WALLS LAB



Malaysia will host its first Falling Walls Lab

- The AIMST University, Malaysia will host the first Falling Walls Lab of Malaysia.
- Registration is free. Certificate will be given to all the participants.
- The winner will travel to Berlin and take part in the global Lab Finale on 8th November, 2016.
- The winner also receives a ticket for the Falling Walls Conference which takes place on 9th November, 2016.
- All disciplines are welcome to participate.
- Registration can be made latest by 20th July, 2016 at: <http://www.fallingwalls.com/lab/apply>

Who can Apply

- We are looking for outstanding talents and innovative thinkers from all disciplines.
- Bachelor and Master students, PhD candidates, postdocs, junior professors and entrepreneurs are invited to apply.

The Falling Walls Lab Malaysia

The Falling Walls Lab takes place on 20th August, 2016 at the AIMST University, Jalan Bedong - Semeling, 08100 Bedong, Kedah Darul Aman, Malaysia.

The Falling Walls Lab Malaysia is hosted by the AIMST University.

Contributed by: Dr. Mukesh S. Sikarwar, AIMST University, Malaysia.



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The organizers are independent partners of the Falling Walls Foundation



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