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Study on Completeness of Mortality Statistics in Myanmar

Completion of mortality data reported by two vital registration systems was assessed with the aim of improving mortality statistics. Objectives of the study were to measure the completeness of registration of mortality data by Civil Registration System (CRS) and Health Management Information System (HMIS) and to recommend the ways and means for strengthening current systems. Multistage stratified cluster sampling was carried out to get a representative sample in 19,640 sampled households throughout the country. Dual recording system was employed by conducting household survey, reviewing and recording of deaths from registers placed at health facilities and from midwives. Data analysis was done by applying Chandrasekar-Deming Method. Findings revealed that completeness of CRS for reporting death events was 58% for urban and 11% for rural areas. For urban areas, coastal region has the highest completion (81%) followed by delta (73%) and hilly regions (57%). Central plane has the lowest completion (29%). For rural areas, central plane was found to have the highest completion (25%) followed by coastal (22%), delta (2%) and hilly region (1.6%).

As regards to HMIS, national level completion was found to be 69% for urban and 46% for rural areas. For urban areas, delta region has the highest completeness (80%) followed by coastal (69%) and hilly regions (67%). Central plane has the lowest completion (62%). For rural areas, central plane was found to have the highest completion (57%) followed by coastal (50%) and hilly region (46%). Delta region has the lowest completion (27%). The study highlights the needs for improving completeness of mortality data by strengthening existing systems to have more valid and reliable information.
Production, Quality Control and Immune Response of Plasma-Derived and Yeast-Derived Recombinant Hepatitis B Vaccines Locally Developed at the Hepatitis B Vaccine Plant, Department of Medical Research (Lower Myanmar):
A Comparative Study

The Department of Medical Research (Lower Myanmar) produced plasma-derived and yeast-derived (recombinant) hepatitis B (HB) vaccines under the supervision of scientists from the CJ Pharmaceutical Corporation, Republic of Korea at the GMP standard DMR Vaccine Plant, Hlegu Township in 2003. This is a non-intervention, comparative study carried out by reviewing the two methods regarding production, quality control and immune response of plasma-derived and recombinant HB vaccines produced during the period from 2003 to 2006. For production process, 35 liters of high titre HBsAg positive plasma were needed as a starting volume per lot and a total yield of 225 mg purified HBsAg with 100,000 vaccine dosages was obtained within a month for plasma-derived HB vaccine production whereas only a single ampoule of master cell bank (MCB) containing the HBsAg protein-expression gene is required as a starting material and a total yield of 5 gm purified HBsAg with 500,000 vaccine dosages can be produced per lot within a month for recombinant HB vaccine production.

Regarding the quality control, more biological tests were needed for plasma-derived vaccine testing for 95-97% purity whereas more chemical tests were required for testing the recombinant purified bulk which had 98-100% purity on SDS PAGE. Results of the clinical trial conducted on neonates revealed that 90.7% of neonates vaccinated with plasma-derived vaccine showed sero-conversion with a mean titre of 415 mlU/ml whereas 100% of vaccinees showed sero-conversion with anti-HRs mean titre of 610.7 mlU/ml. Since the major obstacle for plasma-derived vaccine production is the very limited supply of the starting raw material, HBsAg positive blood, annual production capacity could not fulfill the country-wide requirements in Myanmar.

Therefore, it is suggested that recombinant HB vaccine production, which has an unlimited availability of starting material, MCB and an annual production capacity of 5 million doses at the Vaccine Plant is an appropriate and acceptable method for large scale production of HB vaccine in the future.

News about Medicine & Health

Frequently Asked Questions on Shiga-Toxin Producing E. coli

Current situation
A large food outbreak of E. coli infection has been reported in Germany with 18 fatalities reported since late May 2011. More than 1000 people have fallen ill from various regions in the European Union, including people from Spain, Sweden, Britain, Denmark, France and the Netherlands. To date, the epidemiological risk has affected individuals who travel to Germany. The source has been identified to be from contaminated fresh vegetables with the source likely within Germany. The German authorities have recommended precautions regarding consuming all fresh vegetables (cucumbers, lettuces and tomatoes). Reports from different laboratories indicate that this is a new hybrid super-toxic strain.

What is STEC?
Escherichia coli is a type of bacteria found commonly in the gut of humans and animals. Some of them are capable of producing a toxin (Shiga-toxin) and they are then called STEC, which stands for Shiga-toxin producing E. coli. The strain most commonly identified causing STEC is usually O157:H7, which leads to high morbidity and mortality. As for the outbreak in Germany, May 2011, the strain was 0104. Other common identified strains include O26, O103, O111.

Who is at risk for getting STEC 2011?
Reports have indicated that consumption of contaminated fresh vegetables in Germany is the main risk factor so far. Those at risk are the very young and very old.

How is the infection acquired?
It occurs when contaminated food is consumed. This bacteria is killed at temperatures higher than 70 degrees Celsius. Proper cooking will annihilate any risk. Contamination may occur in the kitchen where poor kitchen hygiene is practiced. It can also be passed on from person-to-person through faecal-oral transmission or within the household, when an infected person does not wash hands after using the toilet.

What symptoms develop after acquiring STEC?
A wide clinical spectrum of disease occurs, from being asymptomatic (not having any symptoms) to a rare condition of haemolytic uremic syndrome—HUS (where the kidneys stop functioning and the platelets in the body fall precipitously low).

People who are affected mostly develop non-bloody watery diarrhoea with severe abdominal cramps, which occurs about three to four days after ingesting the offending bacteria with bloody diarrhoea developing
another three to four days later. Vomiting may occur but fever is usually not experienced. HUS is a rare event that may take place a further five to six days later, when the affected individual develops decreased urine output, pallor and confusion; bruising may occur because of low platelets.

*What are the treatment options for individuals with STEC infection?*

The majority of individuals (especially those who acquire the non-O157 strain) recover within five to ten days. Key to a good outcome is good supportive management and adequate fluid hydration. This may include parenteral hydration.

Current scientific evidence and expert opinions recommend avoidance of antibiotics, especially ciprofloxacin and bactrim as these increases Shiga toxin (Stx) production despite suppression of the bacteria's growth. Avoid using proton-pump inhibitors (eg. nexium and omeprazole) as acid helps to kill the bacteria. Avoid anti-diarrhoea medications like loperamide and NSAIDs (eg. voltaren, ponstan, arcoxia) as this may affect renal perfusion. In HUS, a renal consult is mandatory and haemodialysis may be offered. The use of plasmapheresis is still controversial in the management of HUS.

*What should I do if I suspect I have STEC?*

See a doctor immediately. Drink adequate fluids, avoid NSAIDs. Practice good hand hygiene and wash your hands thoroughly after using the toilet and flush the toilet adequately.

*Source: [www.rafflesmedicalgroup.com](http://www.rafflesmedicalgroup.com)*

**Contributed by Bacteriology Research Division**

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**Hope for Simple Urine Test For Autism**

Children with autism have a range of different symptoms, problems with communication and social skills, such as understanding other people's emotions and making conversation and eye contact. Children are assessed for autism through a lengthy process involving a range of tests that explore the child's social interaction, communication and imaginative skills. Early intervention can greatly improve the progress of the children with autism.

Recently, researchers from Imperial College London and the University of South Austria found out a simple urine test to distinguish between autistic and non-autistic children by looking at the by-products of gut bacteria and the body's metabolic processes in the children's urine. By using 1HNMR (Nuclear Magnetic Resonance) Spectroscopy, they analyzed the urine of three groups of children aged between 3 and 9: 39 children who had previously been diagnosed with autism, 28 non-autistic siblings of children with autism, and 34 children who did not have autism who did not have an autistic sibling. They showed that each of the three groups had distinct chemical fingerprint. Non-autistic children with autistic siblings had a different chemical fingerprint than those without any autistic siblings, and autistic children had a different chemical fingerprint than the other two groups.

Professor Jeremy Nicholson, the corresponding author of the study, who is the Head of the Department of Surgery and Cancer at Imperial College London, told that they hope their findings might be the first step towards creating a simple urine test to diagnose autism at a really young age and the urine test might enable professionals to quickly identify children with autism and help them early on.

*Source: [www.medicalnewstoday.com](http://www.medicalnewstoday.com)*

**Contributed by Biochemistry Research Division**

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**Arsenic, the Silent Killer**

Arsenic- a metalloid element - is a natural part of the earth's crust in some parts of the world and may be found in water that has flowed through arsenic-rich rocks. Arsenic is also emitted into the atmosphere by high-temperature processes such as coalfired power generation plants, burning vegetation and volcanic action. High concentrations of arsenic in drinking-water are found in various parts of the world including Argentina, Bangladesh, Chile, China, Hungary, India (West Bengal), Mexico, Pakistan, Thailand, USA, and Viet Nam.

Arsenic dissolved in water is toxic and can lead to a number of health problems. It has been reported that long-term exposure to arsenic in drinking-water in excess of 50 ppb causes increased risks of cancer in the skin, lungs, bladder and kidney. It also leads to other skin-related problems such hyperkeratosis and changes in pigmentation. Consumption of arsenic also leads to disturbance of the cardiovascular and nervous system functions and can eventually lead to death. These health effects – sometimes collectively referred to as arsenicosis [1].

The groundwater pollution caused by arsenic in a number of Asian countries has led to a major environmental crisis. Some recent estimates indicate that more than 35 million people in West Bengal (India), Nepal and Bangladesh are potentially at risk from drinking arsenic-contaminated water [2]. The
crisis has its roots in another worthy effort to fight water-borne diseases that had impacted this tropical region for a long time. Acute health problems, such as gastrointestinal diseases and infant mortality, were attributed to drinking microbiologically-contaminated surface water.

It was widely believed that using groundwater would easily circumvent the problem because groundwater at certain depths is not exposed to microbiological contamination. It is now known that the alluvial aquifer that underlies the Ganges-Brahmaputra river basin contains arsenic in mineral form. During the past two decades about four million wells have been installed to utilize the groundwater from shallow aquifer layers, typically less than 200m deep [3]. Exploitation of groundwater from these wells for drinking water and irrigation purposes has resulted in mobilizing the arsenic [4].

Awareness about the pollution of drinking water with arsenic and the significance of the crisis has risen significantly during the 1990's. Naturally-occurring and humaninduced arsenic pollution in drinking water has since been discovered in many parts of the world. It is now recognized that dealing with arsenic contamination in groundwater may be a problem of global dimensions.

References:

Contributed by Chemical Toxicology Research Division

How To Combat Your Lifestyle Diseases?

Modern age is the age of stress and stress induced disorders, which are posing a great challenge to the present society¹. In spite of vastly improved technology, minimal risk surgical interventions and life saving wonder drugs, we still face a very dangerous foe in the form of 'life style disorders'

What is stress?
Stress, itself is defined as 'the non-specific response of the body to any factor which threatens the body's abilities to maintain homeostasis.

Stressors
Agents/situations which induce the response are called stressors.

Stress response
Sympathetic nervous system is activated; being a biological survival mechanism built in human system. In short term, these pathways are important for physical survival but when these pathways are employed continuously due to chronic stressors the effects can be devastating. Chronic stress has deleterious effects on the body and may enhance development of certain diseases, i.e. Atherosclerosis, hypertension, diabetes mellitus & decreased immunity resulting in infections, gastric ulcers, bronchial asthma, Psycho-neurosis, etc.

Symptoms of stress
Short term: Increased heart beat, increased sweating, cool extremities, nausea, rapid breathing, tense muscles, dry mouth, diarrhea, irritability, anxiety.

Long term: change in appetite, digestive problems, headache, skin eruptions, sexual dysfunctions, aches & pains, tiredness, heart ailments, seizures, insomnia.

Affects: Healthy regeneration of cells is deranged. O₂ starved cells are the major contributing factor in cancer, immunity deficiencies, heart diseases and strokes.

Combating stress
Lifestyle diseases can be lowered with changes in diet, lifestyle and environment, mind-body therapies like meditation, stress relaxation technique, yoga, etc

Yoga Bhavata Dukaha--Indian sages believe that yoga alone can destroy all the internal & external pains. It is claimed to endow perfect physical, mental & spiritual well being to its practitioners.

Yogic meditation (Dhyana)-- The basic principle of meditation is to develop internal awareness. If practiced for limited periods daily proves helpful in reducing stress, anxiety & raised blood pressure along with improving concentration and creativity besides bringing relief.

Yogic postures (Asanas)-- Yogic techniques in general and Shavasana in particular are known to promote psychosomatic health and enhance one's ability to combat stressful situations. Relaxation decreases anxiety and depression enhances self awareness, prevents exhaustion and protects the heart and other organs and muscles from excessive strain.

Benefits of Shavasana
Reduces muscle tension, improves venous circulation, tones whole nervous system and relieves fatigue, breathing becomes slow, deep and rhythmic.

Results
Ten minutes of Shavasana showed lowering of all basal parameters in comparison to supine position which further lowered (p<0.05) after long term
Shavasana training for 4 weeks.

**Conclusion**

It is inferred that stress increases the sympathetic component of the ANS. Shavasana increases parasympathetic tone, gradually reducing the sympathetic drive as training is continued so persons doing Shavasana regularly can combat stress better as compared to persons not doing so, as it results in better balance between sympathetic and parasympathetic nervous systems.

*Source:* Synergistic approach of applied physiology amp yoga to combat lifestyle diseases.

*Contributed by:* Physiology Research Division

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### RECENT ARRIVALS AT CENTRAL BIOMEDICAL LIBRARY, DMR (LM)

1. Dr. Myat Thida & Dr. Aye Aye Win. Meeting on sentinel surveillance for drug resistance in leprosy; A Report Tokyo, Japan 9-10 November 2010.
4. WHO: Antimicrobial Resistance; 2011