2nd International Congress on Emergency Medical Service Systems (EMS 2013)

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CONFERENCE ABSTRACT

The 2nd International Congress on Emergency Medical Service Systems (EMS 2013) was organized by the Department of Hospital Administration, All India Institute of Medical Sciences, New Delhi, India from 18–20 October, 2013 at New Delhi.

The 2nd International Conference on Innovation & Entrepreneurship in Healthcare (IEH 2013) was also co-hosted in collaboration with the Center for Health Systems Innovation, Spears School of Business and Center for Health Sciences, Oklahoma State University, USA.

Approximately 800 experts and delegates from diverse fields participated in this mega event from across the globe.

The aim of the conference was:

> "To provide an enabling platform of synergy to the Policy Makers, Healthcare Providers, Administrators, Industry Partners and other Stakeholders to deliberate on variables and imperatives of Innovation, Entrepreneurship and Recent advances in Emergency Medical Service Systems and Healthcare Provisioning."

The objectives of this conference were to:

1. Discuss the Essentials of Entrepreneurship and Innovations in EMS & Healthcare
2. Showcase the Innovative Infrastructure, Processes and Equipment in EMS & Healthcare
3. Recognise and honour Individual and Organisation Innovators in Healthcare

The conference also invited entries from across the globle for the coveted Innovation and Entrepreneurship Awards 2013 under three categories:

1. Innovation & Entrepreneurship in Healthcare
2. Emergency Medical Service Systems
3. Healthcare IT

More than 200 entries were received and winners were conferred with a trophy and cash prize under each category.

The Conference provided an open platform to bring together thought leaders, scholars, health managers, clinical practitioners, innovators, and entrepreneurs from across the globe to present research and innovations, and to stimulate discussions on how creativity, innovation and entrepreneurship can help transform health and healthcare delivery. This rich academic fest also hosted an International Exhibition of Healthcare Products, Services and Technologies with a special focus on Emergency Medical Services.

The Impact of Ongoing National Terror on the Community of Hospital Nurses in Israel

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Objectives

Living under ongoing national terror attacks has been part of Israelis' daily experience in recent years, especially between 2000-2004, a period known as the Second Intifada (the Palestinian Uprising) and, again between 2006-2008 (between the Second Lebanon War and the Cast Lead Operation). In cases of national terror attacks in Israel, most hospital nurses have unmediated contact with the victims, providing health services in three contexts:

1) Hospital trauma departments,
2) Hospital surgery rooms and,
3) Rehabilitation departments, either in hospitals, or other health- or community-related institutes.

In all three contexts, the nurses engage with the wounded victims and occasionally with their families within a few days of the injury. Due to the frequency of national terror attacks, most hospitals and medical service providers are already organized to function in the event of a terror attack, and have developed operational procedures for such situations. Attention is also given to the impact of this task on the nurses. The existing knowledge fails to address several issues such: what effect does the ongoing exposure to terror attacks have on the nurses who treat the victims? What is the effect on nurses who essentially share the same reality as that of their patients? Thus, the main goal of this study was to explore the connections between the ongoing exposure to national terror attacks and the related distress experienced by nurses treating terror attack victims.

Method

The data were collected from 214 nurses from various parts of Israel who work in three types of health services (mainly hospital departments) and provide help to victims of terror.

Results

The nurses reported very high levels of burnout, high levels of stress and medium-to high levels of intrusive memories. Levels of exposure were associated with burnout, intrusive memories and level of stress.

Conclusions

More professional attention should be given to hospital nurses who provide care for trauma patients.

Root Cause of Fires in Indian Hospitals and Recommendation for their Prevention

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Analysis of media reports on fire incidents in Indian hospitals reveal how the practices prevailing in Indian hospitals deviate from approved international standards. There exists a certain pattern in the occurrences of these fires as they occurred where oxygen is being administered to patients, such as in ICU, NICU and they involved air conditioners and electrical equipment. Leakage of oxygen gas through the oxygen hood or mask is not unusual in ICU and NICU. Without proper ventilation, the environment inside a hospital ward may easily become rich in oxygen. Oxygen gas leaking out from supply room and entering into nearby X-ray, MRI or Ultrasonography room may also prove disastrous.

When oxygen concentration is more than 23.5% by volume, the environment is called oxygen-rich. Many materials, which are not combustible in normal air, become readily combustible and burn actively in an oxygen-rich atmosphere. The combustion reaction in a material starts when the system has ignition energy higher than the minimum ignition energy of the material. Higher oxygen concentration lowers the ignition temperature and minimum ignition energy requirement of a material. Electrical or metallic sparks or heat provides the ignition energy, which may even come from chattering of contactors, heating of lubricants in the bearing or impact energy of dust particles. Fire may start from oxygen cylinder when rapid release of high-pressure oxygen through orifices of the regulators in presence of dust particles can cause friction or impact resulting in increase in temperatures, which may be sufficient to ignite the dusts, which may bring inner non-metals and metal components of the body within the grip of fire. Oxygen cylinder is responsible for many fires in the ICUs.

Air conditioners use many plastic parts, which are vulnerable to fire in ordinary air and more vulnerable in oxygen-rich environment. Both Split and Window Air Conditioners have electrical control panels exposed to the environment of patients' ward. Control circuit contain electronic chips, transformers and relays, which often produce sparks in course of their operation. When these items operate in normal air, these sparks may not cause ignition. However, in presence of excess oxygen these sparks may be the sources of fire. The motor used to drive the blower in the indoor unit is prone to fire, unless it is sealed from environment. If the motor bearing gets jammed and it continues to draw current, the resistive part of the winding will get heated up and eventually ignite the plastics surrounding it. Electrical wires are often joined with solders, which have low melting temperature. Vibrations in the Air Conditioners often make these connections loose and the joints may spark. Central air conditioners are much safer. Enthalpy wheel or energy wheel helps to achieve effective ventilation preventing cold loss from the air-conditioned wards.

Key Words: Hospital Fire, Oxygen enrichment, Air Conditioners, Energy Wheel, ICU

Monitoring Biosignals Through Smartphones: A Graphical System Design Approach

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The main objective of the study is to design a compact kit, which is capable of biosignal conditioning, extracting vital parameters from the acquired signals and transmitting the processed data to smart phones. Biosignals such as ECG, Temperature, SPO2, Pulse rate, Respiration rate, are to be acquired from the sensors connected to the patients and processed using NI CompactRIO. Processing includes signal conditioning, filtering and amplification. The processed signals from the CompactRIO are transferred to a smart phone via NI CDAQ 9191, through wireless transmission. The smart phone is programmed with Java, using which several applications will be developed to view biosignals. The phone acts as an effective user-interface for monitoring bio signals. Even though multi-parameter monitoring systems are available, the transmission of the acquired data is not viable. Our project aims to integrate the acquisition and processing of essential parameters in a single kit. This will eliminate the need for separate signal conditioning modules for different biosignals. Combining virtual instrumentation technology for physiological measurements brings down the cost drastically and the flexibility is increased. It is because; the hardware kit will remain the same for the processing of any number of biosignals, while only the programming differs in each case. Data containing patient vital parameters can be transmitted from geographically remote and rural areas to urban health care centres for better analysis and diagnosis. Our method of using smart phones to remotely utilize medical expertise will provide rural areas with better access to health care. Health camp personnel will find it convenient to store the collected information on smart phones as opposed to bulky storage devices and paper records. Needless transportations of bulky

equipment and setting up time can be evaded. The scope of this project can be extended to urban health care centres where even patients can maintain/store their medical records in their smart phones.

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Locator and Commucative Device For Dementia Patients

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The aging of the population implies that an increased number of people are going to need some form of care or assistance. In the present scenario, in India 10% of the age persons suffer from a common mild cognitive impairment disease called dementia. Alzheimer's disease and other forms of dementia are characterized by the loss of one's memory and cognition. Patients with this condition undergo rapid mood swings and often wander away from their homes without being aware of it, creating difficulty to the care takers in locating the patient. This issue can be addressed by location based services that provides various positioning technologies and services for the real time patient tracking systems, telemedicine and other personal healthcare applications on a wide range. This research work focuses on developing a patient tracking and communication system for mild cognitive impaired patients. The developed architecture of the system integrates GPS-GSM-3G technology to locate the patient and to communicate them for assistance during emergencies. It also incorporates full duplex, hands free voice communication. The main emphasis of the work is on miniaturization and making the system cost effective indigenous product. The location data obtained are accurate enough within 3 to 5 metre distance. The design incorporates 3G communication technology that provides higher transmission rates: a minimum speed of 2Mbps for stationary or walking users which autonomously alerts the caretakers on customized intervals of time in a faster way. Simultaneously the caretaker with 3G enabled mobile phone can instantly check for the location of the patient from the arrived SMS alert. Apart from the SMS based tracking, an android application is developed primarily in a customized version of Java to make the tracking much easier for individual mobile phone users. This application automatically searches for the position in the Google maps from the location data arrived and a checkpoint is marked in the respective position without any assistance from the user. The checkpoint also shows the time thereby increasing the accuracy of tracking. The checkpoints are combined together forming a route to show the user by which direction the patient has moved subsequently. A live tracking about the location of the patient is also monitored using the web server is also developed for the use of dementia patient care organizations. Free Google maps and the use of HTTP protocol as data sending method reduces the monthly bundle cost for the individual user and also for the hospitals that employ the system.

Key Words: Android, Dementia, Remote tracking, Short Messaging Service, 3G Technology

An Innovative Equipment for Infection Control in ICU

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Introduction

Today, infection control in ICUs is a concern the world over. Various modalities from simple hand hygiene to costly antibiotics are in use. But one simple and scientific fact has been unnoticed till date. Often patients in ICU are put on mechanical ventilators for artificial breathing. The fact neglected is that the air exhaled by patients harboring Multi Drug Resistant Organisms and other microorganisms, is released by the mechanical ventilators into the ICU atmosphere itself. This increases infection in ICU atmosphere and poses risk to other patients and to the medical personnel. The problem is aggravated by air conditioning, which is mandatory but recirculates same foul air over and over again without intake of fresh air.

Aim

Our aim was to develop a fully indigenous equipment which is an innovation in the field of critical care, that can effectively take care contaminated air emanated from mechanical ventilators

Methods

Though ventilators provide life support to the patients, often it is never thought about the harmful effects on other patients. The same ventilators are used again and again in different patients. Many patients are put on ventilators because of respiratory infections, and some of them harbor multidrug resistant organisms. These microorganisms are disseminated in the exhaled breath air of the patients and ultimately reach the ventilator and emanate into the surroundings. This fact was demonstrated by exposing microbiological blood agar culture plates to the air coming out of expiratory port of ventilator, whereby dense growth of pathogenic microorganisms was observed on the culture plates. Moreover some parts of the ventilator are neither disposable nor sterlizable. Over time these microorganisms accumulate in the ventilator and act as a source of infection to other patients as well as contaminate the ICU air. The present prototype of the equipment is totally hand assembled and has been devised by self. This equipment captures the contaminated exhaled air from the expiratory port of the ventilator and directs it out of the ICU space. Thus preventing spread of contaminated air into the ICU

surroundings. The equipment consists of a vacuum generation chamber. One end is attached to the expiratory port of the ventilator and the other end is directed outside the ICU. There is also a negative pressure sensing system and a mechanism to regulate the extent of negative pressure in the system. If the pressure falls below a set limit there is generation of both audio and visual alarms which alert the clinician to take the necessary precautions. There is an Active mode as well as a Passive mode. The system is versatile to be used with any ventilator, therefore it is adaptable with any ICU equipped with any ventilator, the world over. It is portable, consumable free and with low power consumption.

Results

This innovative equipment does not allow contaminated ventilator air to release into the ICU atmosphere. The whole of expiratory air from ventilator is directed outside the ICU. Therefore there is no chance of exposure of other patients to contaminated air.

Conclusion

The equipment is first of its kind the world over and is already under patent process. It has rightly been called ICU Ventilator Air Removal System (ICU VARS). It holds a chance that this technique will gain widespread acceptance shall find use in all the ventilators in most of the ICUs throughout the world and the technique likely to be utilsed by industry.

Key Words: Nosocomial infection, ICU Ventilator Air removal system, innovative, ICU ventilators, MDR organisms

Online Storage of Medical History

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India has among the highest number of road accident casualties in the world. A recent government statistic says that a death occurs every four minutes on Indian roads.

Concept

A website will be launched with two different kinds of accounts - for doctors and patients. Associated with each account, there will be a username, password and account number. The patient's account is a view-only account where they can't edit the details in their account. But they can see who all viewed and updated their accounts. Only an authorised doctor with an account can view or update information on a patient's account. The doctor's account can be used to view or update a patient's account only if he/she knows the account number of the patient. Each patient who registers in the website will be given a card bearing the unique account number. Individuals can carry this card in their wallet while travelling. In emergency cases involving loss of card or account number, biometric fingerprint or retina scan can be used to access the account of the patient. A doctor cannot edit the previous data present in the patient's account and can only add new data. We know that, in the case of road accidents, the initial 30 minutes or so are very crucial. However, in hospitals, this time is being utilized to understand whether the individual is allergic to certain medications, whether there had been any similar past incidents etc. It takes a lot of effort to understand the medical history of patients. This motivated us to the idea of maintaining a website which stores all such data which helps doctors in getting the necessary information within seconds. Each patient will be identified with a unique account number. Accounts are password protected for security and privacy of individuals.

Other Uses

This website will also be very useful for a patient who has to frequently shuttle between various hospitals which is highly common in an Indian scenario, where all hospitals do not have all the specialists. Patients do not have to carry their medical history to each hospital. Common tests such as blood group and HIV need not be taken again at different hospitals. It will also be useful in clinics where doctors prescribe patients common medicines for flu, cold etc. since the patient's medical history is not available. Also, in the incident of second opinion of doctor on a diagnosis, this will be useful. In future, a third type of account will be created for scan operators. They can upload the scans of the patient and the doctor can directly view it instead of the patient having to manually get it from scan operator to doctor.

Revenue

Patients need to pay a certain registration amount as a one-time payment for the maintenance of the account.

Evaluation of mass casualty incidents (MCI) exercises in Germany

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Purpose

In Germany, there is a large variety of different concepts to cope with mass casualty incidents depending on the local resources and preferred tactics. Mass casualty incidents are fortunately rare events, so existing scenarios can only be proven by exercises, hoping the training will pay off in real scenarios. Further, the rare occurrence of MCI scenarios and the lack of possibilities to collect reliable data make it difficult to analyze and to testify existing concepts. The CUAS developed a methodology to monitor exercises and collect qualitative and quantitative data for evaluation.

Method

CUAS uses a combination of different techniques, especially qualitative monitoring by observers and quantitative data collection by a mobilTED system in combination with a local positioning system (LPS). Using a benchmark platform, the data is merged allowing statements about four patient needs: discovery and capture, rescue and relief, treatment and care as well as the patients' transport to hospital. The level of

satisfaction for each patient and its' needs indicates the level of preclinical care. In a last step, the results can be used in combination with the monitoring data to improve different actions by the forces or to adjust the concept.

Result

The data provides a closer look to the performance of a MCI exercise and to the concept itself. Every correctly executed measure is awarded by points. The comparison of the collected points during the exercise with the maximum achievable points, allows conclusions about the training status of forces, the skillful distribution of resources and therefore the practicability of concepts.

Conclusion

The evaluation of MCI exercises is necessary to identify the strengths and weaknesses of the local civil protection concepts. The performance can be measured in exercises by a combination of different methods, merging the data together. Civil protection systems have to be evaluated and rethink like continuously management system to challenge changing risks in a changing world.

Key Words

Evaluation, mass casualty incidents, scientific method, MCI-Benchmarking prehospital, preparedness

Application of Modified Early Warning Score (MEWS) In Pre Hospital Care Setting - A Pilot Study in Sri Lanka

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Background

Pre-hospital care is an advancement of professional emergency care. It is relatively new concept in Sri Lanka, which means an initial medical care provided to an ill or injured patient by a paramedic or other person before the patient reaches the hospital Emergency Department. The early warning score (MEWS) is a useful tool for identifying hospitalized patients in need of a higher level of care and those at risk of in hospital death. In District General Hospital – Matara, Sri Lanka caters to the population of 700,000 in Southern Sri Lanka and the admission rare is 150 patients per day. It was observed that most of the patients were critically ill by the time they were brought to the hospital in terms of severity scoring systems. Therefore, emergency retrieval team was established in order to triage and manage patients in Pre Hospital Care setting.

Objective To evaluate the use of the MEWS as a triage tool to identify patients admitted via pre hospital care service that require admission to hospital and are at increased risk of in hospital deaths.

Method A pilot study was carried out prospectively during 03 months period. Data was collected through a designed format by a trained Medical Officer. A pre hospital care team was set up which include a Medical Officer trained in critical care and critical care Nursing Officers with the specialized ambulance with facilities of advanced life support and monitoring. Initially Medical Officers were trained on application of modified early warning score on critically ill patients during in hospital care setting. This was expanded to be used in the pre-hospital care setting for triaging of critically ill patient in the field as follows.

Modified Early Warning Score

Score	3	2	1	0	1	2	3
Pulse		≤40	41-50	51-100	101-110	111-129	>130
RR		≤8		9-14	15-20	21-29	>30
Temp.		≤35		35.1 37.2	37.3 37.9	≥38	
CNS		Con-fused		Alert	Respond to voice	Respond to pain	Unrespon-sive
Systo BP	≤70	71-80	81-100	101-199			

Urgency Codes

RED	YELLOW	GREEN
MEWS ≥ 6 or Chest pain or	MEWS 3 – 5 or HB <8 or	MEWS 0 – 2 or HB >10
$V_X \geq 16$ or	PV bleeding or	
Hypoglycemia ($V_X < 2.5$)	Haematemesis or	

Results

Of the total patients (n=24) 52% were categorized as red, 15% as Yellow and 33% as Green. Patients who were categorized as red were provided care at ICU facilities while others were given treatment at Emergency Department

Conclusion

MEWS may be used as a rapid simple triage method to identify the level of care needed prior to hospital admission.

The Burden of Illness Index for Road Traffic Injury

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Background

Road traffic injuries (RTIs) have been recognized by the World Health Organization (WHO) as a major public health issue. Typically, authors describe the burden of illness from RTIs by using either associated fatalities, Disability Adjusted Life Years (DALYs) or costs to society. These measures tend to be used inconsistently and in isolation (i.e., non- comprehensively). In the present study, we developed a Burden of Illness Index (BII) for RTIs that provides a more standardized and comprehensive measure of the burden of illness across countries.

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Methods

This study was designed as a cross-sectional examination of secondary data from the WHO Global Status Report on Road Safety 2013. We developed an 18-item scale to assess the burden of illness from RTIs. The index accounts for the following – leading causes of death and DALYs lost, mortality and DALY rates in comparison to the global average, the trends over time for mortality/DALY rates and the economic burden to society. We assessed the index for content validity using expert opinion. For construct validation we assessed the correlation between the index and the national RTI mortality rates. We also compared the associations that the index and the mortality rates have with each of the following independent variables: country income, country education, and availability of emergency medicine training for physicians and nurses. A total of 73 out of the 182 countries in the WHO report were included in the analysis. Inclusion was based on availability of all data.

Results

Relative to those excluded, included countries had higher income and high education levels. The mean score on the BII was 5.6 (SD 3.6) and the median value was 5.0. Venezuela had the highest burden of illness from RTIs with a score of 15 out of 18 while Germany and Japan both received a score of 0. The index was highly positively correlated with the mortality rate ($r=0.876$, adjusted $R2 =0.763$, $p<0.0005$). Countries with a higher income level scored statistically significantly lower on the BII ($p<0.0005$). Similarly, countries with populations having higher education levels scored statistically significantly lower on the BII ($p<0.0005$). These associations were comparable to the corresponding ones with the mortality rates in those countries. Unexpectedly, there was no statistically significant association between BII score and availability of training in post-incident care. The absence of an expected inverse association is perhaps due to unmeasured confounders in this ecological analysis. Nonetheless, the association (or absence of it) was similar to that with the mortality rates, which provides further construct validation of the index.

Conclusion

The BII can be a valid, more standardized and more comprehensive measure of the burden of illness than those typically used in describing RTIs. It can also useful in guiding the measurement of all burdens of illness in global health.

Key Words : Road traffic injury, burden of disease, costs, mortality rates, DALYs

Incremental CPR Skill Training Simulator using Hi-Fidelity Mannequin

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Cardio Pulmonary Resuscitation (CPR) is a life-saving intervention for cardiac arrests. Cardiovascular diseases have reached epidemic proportions in India, with an alarming rise in cardiac arrests. Survival Rate of CPR is disappointingly low in spite of the fact that American Heart Association (AHA) recently introduced "hands-only CPR," [Babrow 2010] in which the rescuer only pushes down hard and fast without rescue breaths. A recent study shows that only about 2% of adults who collapse on the street and receive CPR recover fully [Hagihara 2012]. Chances of survival decrease by 7–15% for each minute delay in start of CPR (Valenzuela et al., Circulation 1997). Depth of Compression (Ian G. Stiell, MD et al. Critical Care Medicine 2012), Speed of Compression (Abella et al., 2005), Chest Recoil (Aufderheide et al., Resuscitation 2005), Ventilation volume (Aufderheide et al., 2004) and Pauses in performing CPR (Christenson J et al., Circ 2009) all affect the chance of survival. Proper training, with a high-fidelity mannequin is essential to impart good CPR skills. One of the impediments to CPR training is that the human chest has a non-linear chest stiffness with the chest stiffness increasing with depth of compression; most commercially available mannequins have a linear chest stiffness, the stiffness remains constant over the entire depth of compression. Also ventilation volume measurement sensor is set up for a specific volume range, the range cannot be varied to suite different CPR Standard. We have developed a CPR mannequin with a non-linear chest stiffness and an adjustable flowmeter to measure the chest ventilation. The sensors embedded in the mannequin to monitor chest compressions and ventilations, communicate communicates with a PC over the USB port. A JAVA based application displays real-time visual feedback of CPR performance, including compression depth, rate and recoil height, in the PC. The MySQL database running in the background, sets up training sessions, testing sessions, saves user data and user specific CPR performance data. The application allows the user to train on each aspect of CPR quality parameters specifically and then combine them all into one overall skills training / testing program, enabling the trainee to build up skills in incremental steps, as in typical part-task simulations in surgical simulators. The application targets both laypersons and EMC professionals, the Chest Ventilation training can be turned off for laypersons in a hands-only CPR. We do not have a country specific CPR Standard, most hospitals follow the AHA standards. The depth and rate of compressions may not be feasible for our population or necessary for our body type – anthropometric data is not available yet. One potential benefit using this mannequin is standardizing CPR Training/Testing method while allowing individual instructors to tweak the acceptance criteria to suit their trainees, and recording the specific CPR Skills learned by the trainees, whether professional or layperson. If this data is matched with actual CPR performance results from

hospitals, we will be able to establish a better fitting CPR standard for the Indian populace.

Key Words: CPR, Part-Task training, High-Fidelity Mannequins, cardiac arrest

Patient Satisfaction in General and Appointment Neurology OPD of Dr. Ram Manohar Lohia Hospital

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Background

Health is fundamental to quality of life. Healthcare system provides preventive, promotive, curative, and rehabilitative care. Hospitals such as primary, secondary, and tertiary care, are key elements in health care system that caters to the needs of people. Hospital is a phenomenon of 20th century. World Health Organization defines hospital as an integral part of a social and medical organization, the function of which is to provide for the population complete health care, both curative and preventive, and whose outpatient services reach out to the family and its home environment; the hospital is also a centre for the training of health workers and bio-social research.

Objective

The aim of this study is to do a comparison of patient satisfaction in General and 'Appointment' OPD of Neurology department of Dr. Ram Manohar Lohia Hospital.

Methods

Empirical study is used to come up with the hypothesis and find the roots and causes of patient satisfaction. The research tool is questionnaire. Neurology patients are source of data. Judgemental technique is employed to get the sample size. Sample size is calculated by the given population of 300 patients in General OPD. By taking 5% as level of significance we calculated the sample size of general OPD to be 171. General OPD sample size was 171 was appointment OPD as well.

t value is compared with table t value to find the actual confidence level and see if means are significantly different. Then, t value is compared with p value table to accept or reject the null hypothesis.

Results and Conclusion

It was found that the mean of general score in General Neurology OPD was 2.35 and standard deviation was 4.For Appointment Neurology OPD, the mean was 3.38 and standard deviation was 4. After using the two- tailed un-paired t test with degrees of freedom 340 at 95% confidence interval, the t value is 2.31, which is much more than 1.98, the table t value at 95% confidence interval for 340 degrees of freedom. Hence, we conclude that means are significantly different. It was found that the actual confidence interval is 98.22%. Null hypothesis was rejected and alternate hypothesis accepted.

Key Words: Patient satisfaction, Neurology OPD, General OPD, Appointment OPD, Hospital.

Healthcare for the "Bottom of Pyramid"

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Background

Despite the technological advancements of 21st century, problems of poverty, ill health and lack of education still plague humanity. Ever widening gap between rich and poor is a glaring outcome of the ineffective social and economic policies. To simultaneously address these issues, newer approaches need to be explored.

Objectives

Introducing Bottom of Pyramid (BOP) concept, need of this approach in a developing country like India, drivers of innovation in BOP segment and use of BOP principles in health care utilization and marketing.

Methodology

Review of policy documents, declarations, recommendations and publications on Bottom of Pyramid approach and health care marketing. Focus was given on practical examples of this approach, applied on to health care delivery in India.

Discussion

Bottom of Pyramid (BOP) is largely constituted by people living below or at the borderline of defined poverty line and participating in the existing informal market economy. The BOP market has already been tapped by business sectors, fast moving commercial goods (FMCG) and microfinance sectors, generating huge profits. Involvement of BOP sector in health marketing is a multi pronged approach to address health and its determinants simultaneously. Utilization of this approach for improvement of public health is at very initial stages. Creating buying power, shaping aspirations, improving access and tailoring local solutions are the pillars of BOP economy. Improvement of health, eradication of poverty, creation of modern cost effective technologies and community empowerment are several plausible outcomes of the endeavor. Multinational companies can be an important player with resources, leverage and research, to coordinate and transfer technologies for creating the BOP market.

Conclusion

Health market for BOP in developing countries has made a beginning. Reverse innovation has challenged the developed world. In times of today, inter-sectoral convergence involving BOP as one of the stakeholders will be an attempt to address health and it's determinants in an inclusive and holistic manner.

Autogenous (Internal) Bone Grafting Without Incision RRBTT (Rakesh Remote Bone Transportation Technique)

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Recent era of minimal invasive surgery has revolutionized orthopaedic surgical outcome. Hence special technique of bone grafting has been innovated in minimal surgical exposure. This new innovated technique called RRBTT. (Rakesh Remote Bone Transportation Technique) is a successful method by which bone grafts of same fractured limb is utilized for oteogenesis without giving any extra incision. Newly innovated instruments has helped placement of bone at the fracture site without any incision.

Material

Bone scoop with cover, Bone starter, Bone graft gauge, RRBTT transportation, Flexible bone pusher

Method

Bone grafts harvested from the entry point and then transported to the # site with the help of transportation tube. There is no need to open fracture site and is very helpful in fracture healing specially when skin around # site is unhealthy.

Advantage

RRBTT provide interamedullary bone grafts, for which parental bone used for the first time of same fractured bone. Internal Transportation being vascular friendly method, fracture heals in a much shorter duration. This procedure is completed with no extra cost to patient.

Result

- Since Dec 2005 - 67 cases were grafted with synthetic bone.
- 87 cases of # Tibia/Fibula with autogenous RRBTT bone graft operated & shows mean healing period of 10 weeks duration.
- 45 cases of # Femur shows mean healing period of 8-12 weeks. (Autogenous bone graft with RRBTT)

Conclusion

RRBTT has shown wide vision and opened a new window which can show us encouraging results of Osteoconduction and Osteogenesis without giving any extra incision.

Knowledge, attitude and practices of relief workers regarding first aid measures

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Introduction

Road traffic injuries are a major threat to individuals and national health systems. Each year, road traffic injuries result in the death of more than five million people worldwide, and over 90 percent of these deaths occur in low- and middle-income countries. The aim of this study was to assess the knowledge, attitude and practices of relief workers posted in rescue and relief bases of the Red Crescent Society of Mazandaran province of Iran during Nouroz holidays.

Methods

Two hundred and nineteen relief workers were selected as the study sample from thirteen Norouz rescue and relief bases of Red Crescent Society in Mazandaran province, which has 13 cities, for this cross-sectional descriptive study. Through a cluster random sampling, a pre- tested, structured and validated questionnaire was used to assess knowledge and attitude of relief workers. A practical test with a check list was used to assess their practices. The data were analyzed by t test and analysis of variance.

Results

The relief workers had an average knowledge score of 56.5% and attitude score of 52.9% on first aid. There was significant difference between knowledge and education level ($p<0.0001$). Of the total relief workers, 83% knew how to correctly perform a Cardio pulmonary resuscitation (CPR), while 94 percent reported that they did not know how to perform endotracheal intubation.

Conclusion

As the data shows, all the relief workers in the study were men. This may be because the Red Crescent Society has very few women volunteers. The study found moderate knowledge and attitude among the relief workers located in Norouz rescue and relief bases of the Red Crescent Society of Mazandaran about first aid procedures. Capacity building of relief workers on first aid will help to reduce morbidity and mortality, especially from traffic injuries.

Key Words: Road traffic injuries, Red Crescent, First aid, CPR, KAP study

Effectiveness and Importance of Pictorial Sign Boards for Patients/Visitors Navigation in Dental Clinics/Hospitals

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Purpose

To evaluate the effectiveness and importance of pictorial sign (symbol) boards, in identifying, directing, navigation and/or trafficking of patients/visitors in a dental clinical/ hospital set-up.

Method

A total of 260 subjects were interviewed using two different structured questionnaires. Pictorial Sign Boards (PSB's) were designed pertaining to the clinical specialties in dentistry. Following educating the subjects regarding the different clinical specialties/departments existing in dentistry, the subjects were asked to fill Questionnaire I. This included matching the numbered pictures of the

adapted PSB's with the different clinical dental specialties, which the subjects think best suits the description of the department (treatment rendered). In Questionnaire II the subjects were asked to rate the particular PSB as the most correct and appropriate description of the concerned department/specialty on a scale of 1 to 5 (Likert-type rating). Questions were also asked pertaining to the need, importance, and significance of using PSB's as a department identification tool by the patients/visitors visiting a dental set-up (Clinic/Hospital).

Results

From Questionnaire I, the maximum correct response was seen for the PSB of the Department of Oral & Maxillofacial Surgery (100%) followed by the PCB of Orthodontics & Dentofacial Orthopedics (99.6%), Public Health Dentistry (99.6%) and Oral Medicine & Radiology (99.2%). The least correct response was observed for the PCB of the Department of Conservative Dentistry & Endodontics (86.2%) and Department of Periodontology (85.8%). Majority of the subjects agreed (Score 5- strongly agree & Score 4-agree) with the PSB's of the individual departments, with maximum agreement being observed for the PSB of the Dept. of Orthodontics & Dentofacial Orthopedics and least for the PSB of the Dept. of Conservative Dentistry & Endodontics and Department of Periodontology. 97.3%-99.2% of the subjects agreed that such PSB are needed and should be introduced in a dental clinic/hospital to help the patients/visitors to identify the respective departments more easily.

Conclusion

Pictorial Sign Boards depicting the treatment aspect of a specialty should be displayed along with the scientifically adapted names and the allotted numbers for the departments, in a multispecialty dental clinical set-up.

Key Words: Sign, Symbol, Pictorial Sign Boards, Dentistry, Effectiveness, Navigation

Blood is a drug, but does salt concentration (Hb) in a unit matters?

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Introduction

Packed Red Blood Corpuscle (RBC) transfusion decisions are primarily based on haemoglobin (Hb) level of patient and other parameters like end organ ischemia are seldom considered in practice. Thus although Hb is the primary concern, all RBC orders are for 'unit(s)' of blood and Hb content per bag – which varies considerably and is not mentioned- is ignored. We planned to study the effect of Hb content of bag on actual increase of Hb in patients post RBC transfusion.

Material and Methods

50 (30 female & 20 male) non-bleeding, euvolemic, adult patients who received only RBC transfusion, were randomly selected for measuring actual increase in Hb post transfusion. Hb content of blood bag, used for transfusion to these patients was calculated using donor data in blood bank. An expected increase in Hb of patient was calculated based on this Hb content and patient's total blood volume. Actual increase and calculated increase in Hb were analyzed for correlation. Student t-test was applied to check the statistical significance and a p value less than 0.05 was considered significant.

Results

One RBC unit led to an increase of 0.4 – 1.7 and 0.9 – 2.3 gm/dl of Hb in male and female patients respectively. Mean increase in Hb was more in females as compared to males (1.54 Vs 1.11 gm/dl; p=0.001) per RBC unit transfused. Based on Hb content of individual RBC unit, an excellent correlation between calculated and actual Hb increase on individual patient basis was found (r=0.759; p<0.001).

Conclusion

Notion of 1gm/ dl increase in Hb per RBC unit transfusion both under and over estimates the actual outcome in individual patients. This may vary by more than 100% which is unacceptable in today's individualized patient care scenario. RBC transfusion based on actual Hb content of bag gives an excellent outcome prediction & should be used to make RBC transfusion decisions. Unscientific 'number of units' based system of RBC transfusion should be abandoned. Also, more studies on bigger sample size are required to further understand effect of patient parameters other than blood volume, on Hb increment.

Key words: Blood Transfusion, Packed red blood cells, haemoglobin increase, haemoglobin content, blood unit.

Aero-Medical Rescue Services

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Introduction

When every second could mean the difference between life and death. Vertically integrated aeromedical evacuation solutions. A range of critical services nationally and internationally air transport/evacuation from pre-hospital/trauma locations and between hospitals.

1. Providing on board critical care, saving time in provisioning of medical support in the time critical medical window.

2. Scope: This paper aims to cover all relevant aspects & stakeholders.

3. ICU environment with cardiac monitoring, IV infusions pumps, pulse oximetery, ventilators, invasive hemodynamic monitoring, emergency medication, defibrillation with pacing capabilities, advanced airway management

4. Level of care

   (a) Basic Life support (BLS) : Patient cannot travel on commercial flight but prognosis is non-life threatening may need monitoring or potential care on board.
   (b) Advanced life support (ALS): Especially trained team.
   (c) Critical care support: Intensive care setting on board with specialist medical team. Generally a especially trained physician and critical care nurse. It may include a respiratory therapist.
5. Flying Parameters
6. The Team

   (a) Medical crew: Training in flight physiology
   (b) Cockpit and cabin crew.
   (c) Special ops team: Former special forces personnel for rescue from rugged challenging environment.
7. Helicopters and Aircrafts:
   (a) Helicopters: Urgent responses to major accidents, emergencies & neo natal care. Also includes mountain/fire/ flood rescue, remote areas.
   (b) Airplanes: Hospital to Hospital. For more specialized or advanced treatment. Inter hospital ICU transfers.
8. Suitable airplanes & Helicopters.
9. Certification of stretchers & other equipment.
10. Financial aspects
    (a) Insurance
    (b) Bank guarantee/ LOC
    (c) Tie ups
    (d) State backing
    (e) Accident compensation
11. Infrastructure:
    (a) Rooftop Heliports
    (b) Public Helipads
    (c) Emergency helipads/open spaces
    (d) Understanding aviation aspects of evacuation
12. Legislation.
13. Legal issues & ethical issues.
14. Certification & standards.
15. Partnerships, CSR, Entrepreneurs, working business models.
16. Conclusion

EMS - Bangladesh Perspective

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EMS means a network of services coordinated to provide medical assistance from primary response to definitive care, involving personnel trained in the rescue, stabilization, transportation, and advanced treatment of traumatic or medical emergencies.1 Linked by a communication system that operates on both local and regional levels, EMS is a tiered system of care, which is usually initiated by citizen action in the form of a telephone call to an emergency number. Subsequent stages include the emergency medical dispatch, first medical responder, ambulance personnel, medium and heavy rescue equipment, and paramedic units, if necessary. In the hospital, service is provided by emergency department nurses, emergency department physicians, specialists, and critical care nurses and physicians. The world understood the need of developing proper EMS long back. The US government started providing this service available by a simple call at 911 since the year 1973.2 The developing countries like Bangladesh are still far behind in setting a goal to incorporate proper EMS due to lack of fund, public awareness , skilled manpower, proper introduction of ethical and legal aspects of EMS. Results of a sample survey in three major cities brings out the lack of mass awareness regarding EMS. 55.3% of the 300 persons questioned were not even aware of EMS and its life-saving role, whereas 93% have first or second-hand (by here-say) knowledge of the occurrence of such incidents. Further, 70.3% felt that EMS could have saved valuable lives. This brings out the ignorance of general public and also the importance of EMS in saving valuable lives. Another important matter brought out by the data is that vast majority of people (95.3%) consider EMS to be the government's responsibility and expect the government machinery to be geared up in providing EMS. Recent catastrophic incidents in two garment factories (Tajreen and Rana Plaza) have opened our eyes to the unnecessary loss of scores of lives. Many of the dead could be saved if we had the training and tools to handle such incidents. Purpose of this study was to bring out the current scenario vis-a-vis EMS in Bangladesh and the obstacles in developing an EMS in Bangladesh and suggest a realistic plan for it.

Emergency Preparedness, Response And Prevention Systems

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Emergency preparedness cannot be left to the last minute and when you are prepared for the worst, it never happens. It is easier to save life, protect the environment and minimize damage to life and property by early intervention. Preparedness includes identification of potential hazards, hazard vulnerability analysis, establishment of emergency response systems and community based disaster risk capacity building

programs. The preparedness enables the appropriate Response to emergencies and disasters at professional and community levels which helps in minimizing the loss to life and property and developing mitigation strategy through golden hour management. The Preparedness and Response ultimately turn out to be a platform for establishing a sustainable system of emergency Prevention through which we can turn this planet into a safer place to live. Let us join hands to build safer and prosperous communities in our region through a joint forum. The below five corresponding key priorities are outlined to address disaster risk reduction efforts in the region:

1. Strengthen commitment for comprehensive disaster risk reduction across sectors
2. Develop capacities to identify, assess and monitor disaster risks
3. Build resilience through knowledge, advocacy, research and trainings
4. Improve accountability for disaster risk management at the sub national and local level
5. Integrate disaster risk reduction into emergency response, preparedness and recovery through establishing trained and equipped Emergency Response Systems in major cities as pilot programs.

The following are the tasks we can do in this connection:

- We should coordinate regional efforts in DRR and guide, monitor as well as report regularly on the progress of the implementation of the agreed framework for action. We should organize a regional platform on disaster risk reduction with selected professionals' team to advance risk reduction policies and support the establishment of regional, national and local platforms.
- We should campaign to create regional awareness of disaster risk reduction benefits and empower people to reduce their vulnerability to hazards and focus on safer schools and hospitals as well as resilient cities.
- We should advocate for greater investments in risk reduction actions to protect people's lives and assets including climate change adaptation, more education on DRR and increased participation of men and women in the decision making process.
- We should inform and connect the organizations and people by providing practical services on Emergency Response Systems, capacity building, publications on good practices and country profiles and the regional assessment reports.

Quality of Social Nursing in Tehran, Iran

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Thought nursing is a healthcare profession focused on care of individuals, families, and communities, yet it is much associated with the society. The aim of the present paper is to investigate and reflect an image of social nursing in Tehran as the capital city of Iran. As the socio-economic structure of the country is changing, timely implementation of social nursing should be of priority, and well practiced. Due to the medical and technological advancement, people have longer life expectancy; resulting in higher dependency upon social services and social nursing in different kinds. So, increasing demand for healthcare services for the seniors, and simultaneously the youth with changing attitudes, and expectations, their emerging problems, and the like; all need social nursing with especial reference to larger cities such as Tehran. Similarly, many adults in Iran are subject to increasing issues associated with their family budget, unemployment, increasing divorce rates etc., all need social nursing, support and protection. The paper examines the roles and functions of 343 sample social workers functioning in Tehran. The main hypothesis of the paper is: "Quality social nursing improves the quality of life of the clients". The Method of research mainly being empirical, it is preceded by theoretical and literature review. Findings indicate the quality of social nursing service in Tehran (Iran) in a quantitative order.

Key Words: Social nursing. Healthcare. Client. Welfare. Well-being.

Jet Ski Rectal Injuries – A Tertiary Trauma center experience

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Jet Ski is the brand name of a personal watercraft manufactured by Kawasaki Heavy Industries. The name is sometimes mistakenly used by those unfamiliar with the personal watercraft industry to refer to any type of a personal watercraft, and is applied to all personal watercraft with pivoting handlebars manipulated by a standing rider; these are properly known as "stand-up PWCs". The speed and use of small watercraft has increased dramatically in recent years. Although a recreational vehicle, this machine is also associated with a variety of injuries. A unique type of injury from these vehicles involves the jet stream that propels the vehicle. These injuries entail the passenger falling on his back and a direct hit from the water jet to the pelvic floor. Rectal, vaginal and perineal Jet Ski hydrostatic injuries have been presented in the literature, as well as spine, brain and femur trauma.

We report our experience in the management of trauma resulting from small watercraft accidents.

Methods

We conducted a retrospective chart review including all adults admitted to our institution with injuries sustained in small watercraft accidents during the years 2008-2011.

Discussion and Conclusions

Jet skis can cause severe injuries including abdominal, pelvic, perineal, vaginal and skeletal. Severe rectal and vaginal trauma may necessitate a laparotomy and diverting colostomy in addition to local repair of the rectum, vaginal wall and pelvic muscle restoration. Such severe injuries can result in fecal and urinary incontinence and obstetrics problems following vaginal damage obstetrics problems following vaginal damage. All of our three patients suffered from similar injuries due to the same mechanism. In all cases the patient was the backseat passenger sitting behind the driver of the jet-ski that fell off during acceleration/maneuvering. The patients were injured by falling straight back, with legs spread and pointed up, while the pelvic region was hit by the powerful water-jet. Our experience has shown that these injuries are more prevalent in women, due to their anatomy and lack of protection of the perineum when falling on their back and getting hit by the powerful water jet.

Key Words: Rectal Injury, Jetski, Tertiary trauma center, Prevention

Self-Directed learning Readiness Factors in physicians for implementing e- learning in the Continuing Medical Education Programs

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Self-directedness involves the learners taking the initiative to identify their own learning needs and goals, selecting and using the learning strategies that work best for those needs and is able to use basic skills, organize time, and develop a plan for completing work given to them. The traditional methods of Continuing Medical Education (CME) do not satisfactorily meet the lifelong learning and professional development needs of health care professionals. Due to the clinicians are expected to maintain their medical competency and thus need to improve and be informed of the many new therapies and diagnostic methods and tools related to their professions. E-learning can also be as the alternative solution with learners studying at their own pace, place, time and preferred ways of navigation. This contribution of technologies is dependent the careful planning and consideration of various readiness factors. This study has aimed to assess the self-directed learning (SDL) readiness factors on physicians in e-learning on the CME programs

Methodology

This descriptive study examines the self- directed learning (SDL) readiness for e-learning in the physicians who participate in CME programs in Iran. The research questionnaire formulated to four categories (knowledge, attitude, skills and habits), with 37 statements to assess physicians self-directed learning competencies about e-learning readiness. Factor analysis was applied to analyses the data.

Finding

The results showed the mean of readiness on learners (physicians) was 3.35±0.43 of 5 in self -directed learning readiness domain. The maximum rate was 3.83±35 on attitudes and the lowest was 2.79±.43 on habits domain. The most participants had an average of SDL readiness (38%). Thirty six per cent assessed themselves as good and 10% were excellent. Only 16% claimed they were weak in this domain. More than 70% of the respondents had positive attitude toward e-learning. The majority (87%) claimed that they prefer learning through independent project. There was no significant difference in demographic characteristics such as age, gender and work experience, but computer experience had effect

Conclusion

Concerning self-directed learning is an important aspect in the adult lifelong learning. Thus, university of medicine turn toward the implementation of e-learning for the training of physicians are needed a particular model to assess and identify factors that influencing on self-directed learning readiness to improve them because the self-directed adults will learn more, learn better, retain, and make better of learning than do reactive learners and so have more power in creating their own path in the journey of continuous learning throughout their life.

Key Words

Self-directed learning, physicians, Continuing Medical Education

Comparison of diagnostic power of the FOUR scale and the GCS scale in discharge outcome Prediction of patients with traumatic brain injury admitted in intensive care Unit

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Background and Purpose

Traumatic Brain injury (TBI) is one of incident reason of mortality and disability throughout the world. The most widely used and most famous coma score to date is the Glasgow Coma Scale (GCS), which is used worldwide to assess level of consciousness and predict outcome after TBI.Since the four scale has many advantages rather than GCS we decide to determine whether the Full Outline of Unresponsiveness (FOUR) score is an accurate predictor of discharge outcome in TBI patients and to compare its performance to GCS.

Materials and Methods

This is diagnostic study that prospectively on 53 TBI patients admitted to ICU of education hospitals of Mazandaran univercity of medical science between February 2013 and June 2013. Data collection was done with check list that contain biographic and clinical information and outcome. The FOUR score and GCS Were determined by the researcher in the first 24 hours.

Outcomes were in-hospital mortality, and poor neurologic outcome (Glasgow Outcome Scale (GOS) 1–3) in discharge time from hospital.

Results

In this study, 11people (20/8%) were female and 42 people (79/2%) were male. The average age was 33/8±12/6 years. 22 patients (31/6) had a poor outcome defined as a Glascow outcome scale from (1-3) and 10 patients(18/9%) died. In terms of predictive power for in-hospital mortality, the area under the receiver operating characteristic (ROC) curve was 0/92(95% CI. 0/81-0/97) for FOUR score and 0/96(95% CI. 0/87-0/99) for GCS. In terms of predictive power of poor neurologic outcome, the area under the ROC curve was 0/95(95% CI. 0/86-0/99) for FOUR score and 0/90(95% CI.0/79-0/96) for GCS as evidenced by GOS 1–3. The cut-off 6 showed sensitivity and specificity of total four score predicting poor outcome at 0/86 and 0/87 while the cut-off 4 showed the value of in hospital mortality at 0/90 and 0/90. The total GCS score showed sensitivity and specificity 0/100 and 0/61 at cut-off 7in predicting poor outcome while in predicting mortality at cut-off 4 this range was 0/100 and 0/92.

Conclusion

The FOUR score is an accurate predictor of discharge outcome in TBI patients. thus researcher recommend for trapeutic Schematization it will be use in neurosurgical patients at admission day.

Key Words: Traumatic brain injury, FOUR , GCS, Outcome,ICU

Feasibility of Community-led Video Education (Digital Public Health) for effective Behavior Change and Communication

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Objectives

The objective of the study is to assess the feasibility of Digital Public Health as an effective behavior change and communication model to improve maternal and newborn health (MNH) care practices.

Background

The traditional way of health education in Mother Group has yet to reach sustainable improvement in MNH practices. The paper presents findings regarding the feasibility of implementing video based health education model in mother group setting by local ASHA worker. The Communication through community video for agriculture education has already created changes in the framing practices within the country and abroad. Through digital public health project attempt has been made to transferring the model for health education at community based setting by using local resources.

Method

The model has been implemented in 27 villages across 55 mother groups. The feasibility was assessed through the attributes like community engagement, ownership in the process, increase in participation and ability to recall key messages. Individual participation has been tracked through individual registrations and knowledge retention through a pre-post dissemination questionnaire.

Results

Within a span of six months monthly viewership has been increased by 21% with average number of participation per screening was 15. Pre-post result revealed that there is increase in 50% knowledge on MNH practices. There was an overwhelming response from the community and demanded for more screening with different health topics. ASHA workers claimed that 99% screening were successful.100% Community Advisory Board meeting held with significant ownership and inputs.

Conclusion

Data revealed that health education through video at community setting is not only feasible but also encourages participation. The community ownership had added flavour on the level of acceptance.

Implications: Having established the feasibility of the model, the next phase is to measure the effectiveness of the model on changing behaviour of the community.

Key Words: Digital Public Health; Mother group; Screening; Community Advisory Board; Video based health education

Role of Video Recording in Quality Assurance of Emergency Medical Services

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Video recording is widely used for varied purposes in Emergency Department. It is used to assess interpersonal and non-verbal communications, which are often difficult to monitor by other means. Optimum care of emergency patients requires rapid assessment and treatment and investigation with a correct order of priorities. Other than by Stationing a skilled observer in the reception area with notebook and stop-watch, Video recording offers the only way to assess whether the objectives are obtained. The camera is set to automatically date and time stamp and so it is easy to establish how long it takes for personnel to attend, and to time clinical procedures required during the care of critically ill patients. The video-recordings enable a sharing of valuable experience and this produces a definite improvement in the emergency medical services. Round the clock monitoring through video recording can improve quality of care given to emergency room patients drastically. In our study, Following Quality Indicators of Emergency Department were monitored through video recording-

1. Internal transportation

2. Time to triage

3. Response times (ER staff; Registrars; Consultants)
4. Turn Around Time incidents (Including diagnostics, Patient safety and work-related Incidents)
5. Delays in Shifting
6. Lama Handling process
7. MLCs, effective handling of disputes on delays related to the patient care
8. Brought dead, and Deaths handling process
9. Duration in the Emergency Department
10. Clinical Indicators

Video clips were reviewed by our Consultants and Senior Registrars, and subsequently reviewed with our Administrators during audit and teaching sessions. Total of 500 patients coming to Emergency Room were observed between Jan 2013 to March 2013.It was observed that 194(38.8 %) patients were brought in ER on wheel chair, 270(54%) patients were brought on stretcher while 36(7.2%) patients were walk in patients.171 (34.2%) patients had violation of Triage Time. Response Times (ER staff; Registrars; Consultants) were non compliant in 137(27.4%) patients.TAT was non compliant in 9.2% of tests.43 (8.6%) patients had delay in shifting. No untoward incident was observed in handling MLCs, death and brought dead. Our study aims to utilize Video recording of Emergency room team as an effective quality improvement tool to evaluate Emergency Room performance, psycho-motor skills and techniques, and to identify educational/ training needs related to specific procedures. Our Study also aims to utilize Video recording of Emergency room team as an effective tool for improving emergency team performance by educating clinical staff regarding roles and responsibilities.

Key Words: Emergency Room-ER, Video Recording, Quality Indicators Emergency Room Performance, Time of Triage, Response Times, Turn Around Time

Ultrasound image acquisition by a personal computer-Application of artificial neural network

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Ultrasound imaging is based on the same principles involved in the sonar used by bats, ships, fishermen and the weather service. When a sound wave strikes an object, it bounces back, or echoes. By measuring these echo waves, it is possible to determine the objects' size, shape and nature. Doppler ultrasound is a special application of ultrasound that can measure the direction and speed of blood cells as they move through vessels. Traditional probes consist of 40 to 60 crystals each attached to a pin attached to a specialized cable of minimum 2 to 3 m. Each crystal has piezoelectric properties. To capture images by personal computers to improve accessibility and reduce the cost of having ultrasonic image with special reference to obstetrics and gynecology emergency settings, a probe was designed consisting of three Doppler transducers (each with 4 pins hence generating 4 signals, altogether 12 signal) that by an analog switching with micro (1000 HZ per second) can generate 12000 signals per second changing the scan line form linear into a plane. The signals are translated into WAV sound format file that can be displayed by a Windows-based program of a personal computer. The pattern produced is created by the sound of blood flow in an organ. This vascular pattern was matched with traditional sonography of the organ. By training the network, the resolution of images can be improved further based on the formula: output = 0.77*target + 38. The probe can capture images 1/6 resolution of a traditional probe, deeper penetration (19 cm depth), 1/34 price and weight of a traditional ultrasound equipment

Key Words: Doppler transducers, scan line, artificial neural network, ultrasound, obstetrics and gynecology.

Cultural sensitivity give birth to MAMA (maternity & childcare ambulance) in Dubai, UAE

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Introduction

The Maternity & Childcare Unit: In 2009 the Dubai Corporation for Ambulance Services (DCAS) has started the Ambulance for Maternity & childcare ambulance to manage the pregnancy issues and pay more attention to pregnant women during the difficult hours before reaching the hospital with 8 specially trained female paramedics as per cultural sensitivity round the clock. As demand increased in 2011 added another unit with 8 more staff. Next time you see a female paramedic dressed in pink, bear in mind that she is on a mission to save two lives at a time. "A survey we did and it showed that a majority of women surveyed supported the idea of a dedicated ambulance to deal with pregnancy issues. There was also the need looking at the traditions of society, as it is more comfortable to have female medics attending to women,"

Objective/Hypothesis

The hypothesis of research study is to assess the increase of demands of specialized ambulance services called MAMA (Maternity & child care ambulance) as per cultural sensitivity and to provide better care for pregnant women in prehospital setting.

Methodology

Sample Size: Data has been collected during last three years (1ST January 2010 to 31ST December 2012) *Inclusion Criteria*: All emergency obstetric cases attended

by maternity ambulances. *Exclusion Criteria*: All cases other than obstetric cases were excluded from this study.

Results

In 2010 the maternity ambulance started with 8 female paramedics trained in Obstetric care. The data were collected by the ambulance crew after the call was completed. In 2010 the maternity ambulance attended the 230 Obstetric cases while in 2011 and 2012 the maternity ambulances attended 437 and 585 respectively as per increased their demand. The following table shows the increase number of demands for the maternity ambulance as the community appreciated the obstetric patients treated by female paramedic cases.

Obstetric cases attended by maternity ambulances

Obstetric cases	Maternity Ambulance		
	2010	2011	2012
Hemorrhage Greater Than 20 Weeks	13	27	37
Hemorrhage Less Than 20 Weeks	26	64	69
Labor	83	106	123
Pre-Hospital Delivery	21	21	26
Other Obstetric cases	87	217	330
Total	**230**	**437**	**585**

Conclusions

This study helps to provide better obstetric care as per cultural sensitivity where female patients prefer treated by female paramedics. This ambulance service is proving a success; not only among women, who prefer a lady to lady service, but also among men who are more comfortable knowing women are attending to their wives, sisters, or female relatives in such critical situations.

Predictors of Inhospital Cardiac Arrest and its prevention in a Cardiac Unit

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Objective

Identification of predictors of inhospital cardiac arrest, prompt recognition of deteriorating vital signs and laboratory parameters in patients with risk factors and intervention by Medical Emergency Team can prevent arrest and consequent mortality.

Methods

Utstein style definitions were used to define events. Survived event was sustained return of spontaneous circulation (ROSC)> 20 minutes. An outcome Model, with CPR as dependent variable and risk factors in the patient' profile as independent variables, namely , demographic risks of Age and Sex, severity of illness and therapeutic procedure, was developed using a stepwise logistic regression followed by firth logit regression. Independent variables included: age, sex, binary variables of myocardial Infarction, acute coronary syndrome, Unstable Angina, ST Elevation, Ant MI, Inf MI, Post MI, Cardiogenic shock, Atrial & Ventricular Arrythmia, Complete Heart Block ,RBBB,LBBB, Aortic stenosis, Tricuspid stenosis, Pulmonary stenosis, Mitral stenosis, Aortic regurgitation, Mitral regurgitation, Congestive heart failure, Left ventricular Dysfunction, Left ventricular failure, Constrictive Cadiomyopathy, Dilated cardiomyopathy, Ischaemic cardiomyopathy, Ejection Fraction ,Acute Pulmonary embolism , Ischaemic heart disease, Two vessel disease, Three vessel disease ,Diabetes mellitus, Bronchial asthma , Renal failure with creatinine value> 2mg/100 ml, Cerebrovascular accident, New Cerebrovascular accident with symptoms lasting more than 72 hours within 2 weeks of admission, Lung diseases such as Pneumonia and COPD and Infection and binary variables of treatment procedures including Primary percutaneous intervention, PCI Ist and second intervention, Coronary angiography, Plain Old Balloon Angioplasty , Intraaortic balloon Pump insertion, Temporary Pace making, , GP IIb/IIIA Receptor antagonist administration, Mechanical ventilation, Thalium scanning, Colour Doppler, Tracheostomy and Haemodialysis. Bootstrapping was used to validate the model.

Setting

Cardiac unit of Multispeciality Hospital in Saudi-Arabia.
Participants: Patients admitted in cardiac unit from Nov 2011 to Oct 2012, n=2025.

Results

77 patients had CPR and 29% survived to discharge. Average length of stay for survivors was 14.78 days and nonsurvivors 8.9 days while average age was 60.29 yrs and 67.29 yrs respectively. Validated Model identified Age, MI, Cardiogenic Shock, Ventricular Arrythmia ,Left Bundle Branch Block ,Respiratory insufficiency requiring Mechanical Ventilation, Renal failure needing dialysis & New Cerebrovascular Accident as predictors of CPR. Hosmer-Lemeshow statistics was 8.76, 8 df, p value .3634 and C statistics .8566 indicating adequate discrimination and calibration. Among those who underwent CPR 66% with MI , 63% with Cardiogenic shock , 50% with Ventricular Arrythmia, 50% with LBBB, 65% on Ventilatory support, 88% on Haemodialysis and 100% with NCVA died in Hospital. Overall Mortality was MI 4.29%(p=.009),VT 13.15%(p=.000),CS 23.80%(p=.000),LBBB 5.26%

(p=.231),Mechanical ventilation 35.29 %(p=.000),HD 36.84%(p=.000)& NCVA 20%(p=.017).

Conclusions

Cardiac arrest leads to higher mortality in high risk patients. Risk Identification with effective monitoring of clinical and laboratory parameters by Medical emergency teams (MET) has the potential to reduce cardiac arrests, decrease mortality and increase quality of care.

Key Words: Inhospital cardiac arrest, Outcome Model, risk factors, Medical emergency team, Quality of care.

Implementation of A Lean Project In Emergency Department In A Multispeciality Hospital

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Background

Patient feedback was taken to gather information about patient dissatisfaction levels which was increasing day by day. The most common of the dissatisfaction were longer waiting time, less time spend by the nurses at bedside, etc.

Aim & Objectives

Improved patient flow process, thereby doing process improvement to decrease waiting time, Decrease the number of patients that left without being seen and Increased patient satisfaction

Process Mapping and Problem Identification

Detailed process analysis was carried out and following problems were identified:

- Poor Visual Management:
- No Visual Information present regarding patient status available to Doctors & Nurses which in turn leads to delays in locating the patient
- Number of Staff do not match the patient load
- Manning in ED was not as per the peak load hours and Unavailability of General Duty Assistants in Emergency for activities like sending lab samples, transferring patient to radiology for investigation etc.
- Inefficient Inventory Management
- Inventory not kept in patient areas wherein Nurses had to run for getting BP apparatus, Thermometer from central store located behind the main reception area.
- Improper utilization of beds due to blocking of patient beds by the patients waiting for admission.
- Faulty communication between Front Office and Emergency bed manager and between nursing personnel.
- Partial compliance to the existing SOPs and policies like Initial Assessment by Referred consultant/Bed Management/Ambulance Protocols

Process Improvement Initiatives:

- Visual Board
- Effective Information Dissemination regarding the patient status and related activities
- Ease in locating the patients for the consultants
- Ease in keeping a track of patient flow.
- Re-allocation of staff proportionate to patient load in the various shifts
- Separate General Duty Assistants for ambulance call and Effective utilization of existing staff
- Application of 6 S Principle for Inventory management
- Bed Status Information
- Bed Status was regularly updated by Front Office
- Redefining the Job responsibilities for Non-Medical Staff - Ward Secretary, Program Manager, Clerk, etc.
- Review of existing policies and ensuring adherence to them
- Ambulance policy
- Initial Assessment Policy by Referred consultant

Benefits from the Project

1. Decision Making: Inclusion of a Medical Quality professional in areas of decision making in Management Committee
2. Planned Checklists and Standardized Protocols- Development of User Friendly Checklists / Tools/ Scorecards
3. Resource Reallocation and Improving the bottom line of the Company Profits- Replacement of Non Value added items with Value added items
4. Process Mapping & Process Improvement Thereby improving quality, safety, outcomes, efficiency and costs.
5. Improving Patient Satisfaction

Measuring Quality in Health Care

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There has been an increasing focus on measuring quality in health care in USA in the past few years. Driven by rising cost of care, both government and private payers are raising concerns that they are not getting the quality of care they are paying for on behalf of their enrollees.

USA spends more than any other country per capita on health care and yet it ranks 18th in infant mortality and longevity. Also troubling is the fact that costs continue to rise without any proven improvement in care. The biggest challenge has been designing metrics that are relevant and reliably measure quality. Recent health care reform legislation commonly known as Obama care is putting more focus on measuring quality and looking at alternative delivery models to bend the cost curve downwards.

This paper will outline various Government and private payer initiatives that exist in USA. These include Physician Quality Reporting System (PQRS), Clinical Quality measures as a part of meaningful use program, Hospital Value-Based Purchasing Program, Bundled payment program, Consumer Assessment of Health care providers and systems, Surgical Care Improvement project (SCIP), Hospital acquired Conditions project (HAC), Patient Reported Outcome Measurement system (PROMIS), Patient safety indicators, Healthcare Effectiveness Data Information Set (HEDIS), Bridges to excellence, PROMETHEUS and Leapfrog initiatives. One of the presenters has personally interviewed Quality and Risk department staff in 4 different type of hospitals- safety net urban hospital, rural critical access hospital, urban for profit hospital and urban non-profit hospital. The options that these hospitals considered and decisions they made regarding measures selection and data gathering along with the challenges encountered will be discussed. Specifically, the presenter will discuss the planning steps undertaken by these hospitals, resources they allocated and challenges they faced both internal and external. This will provide a rough framework and guidance for Hospital leaders in India looking to implement quality programs in their institutions.

Key Words: Measuring Quality, Healthcare, metrics, resources, programs

Certificate course in evidence based diabetes management: an approach toward building capacity of primary care physicians in diabetes care, India

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Introduction

Diabetes is considered as one of the major contributors to global burden of disease, it exemplifies management challenge because of long latency, chronicity, multi-organ involvement and long term care. In India, health system is constraint in term of trained manpower and limited institutional capacities for diabetes management. A balanced approach to equip primary care physicians with advanced and newer evidence based knowledge for better diabetes management is fundamental need of the hour. So this article/paper is aimed to assess the impact and effectiveness of PAN INDIA Certificate Course in Evidence Based Diabetes Management (CCEBDM).

Methods

CCEBDM is evidence based diabetes management course with objective of improving the treatment outcomes for patients by serving as evidence based guidance for clinical decision making in risk assessment, diagnosis, prognosis and management of diabetes. Improvement in knowledge of physicians was assessed by quantitative and qualitative methods. For quantitative analysis pre and post test scores were used and for qualitative analysis, end-line evaluation as a cross-sectional survey was conducted with 100 and 125 randomly selected physicians from CCEBDM Cycle-I and cycle-II respectively using pre tested scheduled questionnaires two months after completion of cycles.

Results

Pre-post test score of 2776 physicians were assessed for the knowledge improvement and it was found that there is significant improvement (P value < 0.05) in knowledge regarding basics of diabetes, pharmacological treatment, acute and chronic complications with management. Once the course completed frequency of treating diabetic patient/physician/month increased (38% 501 to 1,500 patients per month and 44% stated that they treated about 101 to 500 patients per month), confidence level of physician increased in field of diabetes diagnoses and management. Frequency of physicians who confident to manage diabetic complication like hypoglycaemia (73%), peripheral neuropathy (94%), skin complication (82%), sexual dysfunction (78%), diabetic foot (74%) and nephropathy (71%) increased. 90% were confident about managing patients on insulin independently.

While assessing the clinic structure it was found that 66% of physicians had provision for laboratory facilities routine blood screenings, 53% had on-site dieticians who helps the diabetic patients, 35% had a counsellor to guide the patients, 49% were using DBMS, 79% had full time nurses on duty, 76% used various forms of Patient Education Resources to elicit awareness about diabetes. Majority of the physicians agreed that the course contributed significantly to their knowledge of diabetes management, added value to their treatment skills. All agreed that curriculum was up-to-date with latest advances and guidelines and faculty's personal clinical experience added to their teaching were very useful and now they can consult the diabetic experts anytime for references.

Conclusion

CCEBDM is an evidence-based course and uses recent clinical findings in developing clinical guidelines for better management of diabetic patients is very effective in knowledge improvement of physicians and ultimately improvement of clinical practices in diabetes management. Also by building the capacity of primary care physicians in diabetes management, it seems to be a solution to control the increasing burden of diabetes and to improve the productivity of people who are living with diabetes.

Key Words: Capacity building, diabetes, physicians, evidence based, course

Traumatic Motor Vehicle Accidents: Implications Of Illicit Drugs Use

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Driving under illicit drugs is one of the public health problems. It may raise probability of car crash accidents worldwide. Therefore, the present study conducted to recognize the prevalence of drugs user and factors influence the severity of injury in motor vehicle accidents (MVA). The urine test was performed to detect the presence of drugs. Subsequently, the Injury Severity Score (ISS) system was applied to measure the severity of injury in patients. The findings revealed that out of 92 patients, 38 % of patients were drug users. Cannabis was the most frequently detected drug with 49 %. From the multiple logistic analysis, it revealed that age (P= 0.039) and safety precaution (P<0.001) were determined as a significant factors associated with the severity of injury among patients. In conclusion, illicit drugs user was prevalent among drivers in our population. Besides, age and safety factors might give implication to severity of accident.

Telemedicine in EMS--Upcoming field with unlimited opportunities

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Telemedicine is the use of tele-communications for diagnosis, patient care and treatment. Telemedicine has been incorporated in many medical specialties. Telecommunication technology provides medical services to sites that are physically separated from the provider. Advances in new information and communication technologies, along with the greater accessibility of these technologies and improvements in the connectivity of medical equipment, now facilitate the care of patients who have difficulty in approaching medical facility. One of the most important applications of telemedicine is its use in emergency care. It has greatly increased the range of emergency medical care situations in which telemedicine can be used in remote locations. Increased communication between emergency professionals and other specialist clinicians could facilitate improved diagnosis and as a result reduction in morbidity and mortality among patients attending emergency departments. This helps in decline of ED use for nonemergency problems which reduces health care costs. According to Rochester study community, where the ED to telemedicine payment ratio was 7 to 1. The telemedicine communication link usually involves standard telephone service through high speed, wide bandwidth transmission of digital signals in conjunction with computer enhancement. Telemedicine is at infancy stage, it is an exciting new field with unlimited opportunities.

Key Words: Telemedicine, Emergency medical services, Telecommunication, healthcare cost, accessibility.

Telemedicine in Emergency Care: Spinal Cord Injury

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Introduction

This paper focuses on remote monitoring of people in the field of Rehabilitation Medicine. Rehabilitation starts from day one of injury and carries on well after patients have been discharged home. It is typically a service from “injury to grave,” for the 40,000 people involved; but given the low numbers involved many GPs and hospital doctors would not have come across many of them, and therefore would hardly be familiar with the problems that they pose. Yet, during their lifetime such patients will be exposed to illnesses, some of which are real emergencies and it would be helpful if specialists in intensive care and neurological rehabilitation were able to provide support. In many cases people live in remote villages.

About Medical emergencies

Tetraplegics or high level paraplegics can suffer from a condition called autonomic dysreflexia, which is characterised by sudden onset of pounding headache, very high blood pressure, profuse sweating due to an imbalance in the autonomic nervous system. This is a real emergency as untreated, it can lead to hemiplegia or death. Ventilator dependent patients can experience problems with their airways or the ventilator or of general health. High level paraplegics and tetraplegic patients may have chest infections, with inability to clear secretions due to weakness in the expiratory muscles. Others will have severe urinary tract infections or pressure ulcer with septicaemia. Clinical assessment may be difficult for the non-specialists due to poor sensation. As specialists in Spinal cord injuries are few in numbers and ITU services are not widely available, Telemedicine can help to improve access to these and provide peace of mind to those vulnerable patients.

Telemedicine

The principle is to allow patients themselves and their families to access to emergency specialist care as needed, using any telecommunications means available (telephone, encrypted video-conferencing and internet). Practical implementation of the process results from 11 years of research that the author carried out in the fields of Telemedicine and Telehealth. Patients at risk are discharged home with a device that allows monitoring of vital signs (Blood Pressure, Pulse, Temperature, Oxygen Saturation and ECG) and two-way video-conferencing with the ability to send and receive still and live images, e.g. to show a skin condition. It is linked to a server managed by a call centre manned by specialist teams, with the ability to get instant intensive care or spinal cord injury related medical emergency help. A 3 D representation will illustrate how the system is being designed, with the focus being on a patient-centred device able to be used by people with physical

impairment, as well as those who experience visual and cognitive problems.

Conclusion

Access to emergency care is essential for the above group. Innovative technology will ensure that they are safe.

Key Words: Telemedicine, spinal cord injury, rehabilitation, emergency care, remote monitoring.

Distance laboratory system to help the rural poor in Badulla district

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Background

Severe shortages existed in Medical Laboratory Technicians (MLT) to serve in the Badulla district. Whilst existing cadre positions in primary level institutions occurred shortages existed even at Base hospital level due to non-availability of approved cadre.

Statement of problem- Inadequate laboratory staff (MLTs) and facilities have led to a situation where many patients have been transferred from the periphery to provincial General Hospital Badulla for laboratory investigations.

Objective

To improve access to laboratory investigations in peripheral health institutions

Specific Objectives:

1. To provide investigation facilities those are not available in the periphery

2. To provide a quality and timely investigation report to benefit the rural poor

Methodology

Arrangements were made for laboratory specimens from the periphery hospitals to be brought to the Provincial General Hospital Badulla for investigation by a minor employee using public transport. Containers to transport the specimens were designed by the institutional heads considering the fact of mode of transport.

A pilot project was carried out to improve the laboratory system for institutions situated in one bus root. The monitoring and evaluation was carried out according to a log framework. After an evaluation of the pilot project was carried out the system was extended to another two routes extending to other six hospitals. Now around the country The specimens to be tested were selected by the Consultant Pathologist and Microbiologists at Provincial General Hospital. Biochemistry tests were given the priority taking in to account the capacity of the auto-analyzer in G.H.Badulla The time of collecting the specimen, the time before which the specimens should be handed over to the laboratory in G.H.Badulla were notified to the head of institutions and to the minor employees bringing the samples. Attendants were issued with an identity card that was designed to give dignity to the persons who transported the lab specimens. Test results are faxed to the peripheral institution on the same day of sample dispatch. The institution also receives the regular report on the following day as the attendants collect the report of the previous day to be dispatched on the return journey.

Results

2678 no. of tests (421 Blood Urea, 367 Serum Cholesterol,182 SGPT,173 SGOT, 408 Serum Creatinine,153 Fasting Blood Suger,50 Serum Bilirubin, 139 Al Po4,133 Serum Proteine, 652 Serum Electrolyte were performed for peripheral institutions in the Badulla district during the 6 month period. The total cost of travel to implement the system during this period was Rs 71106/=. A unit cost of Rs 27/= was expended for travel.

Conclusions and Recommendations:

The distance laboratory investigation system piloted in Badulla district is a process had proven cost benefit and cost effectiveness. This system can be successfully replicated in any setting with resource constraints. An appropriate monitoring mechanism needs to be in place to make the system cost efficient.

Pattern of injuries of road traffic accidents reporting to a health facility in Haryana

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Introduction

Injuries and fatalities occur in all forms of transportation, but numerically, road-traffic accidents account for the great majority worldwide. The alarming increase in morbidity and mortality owing to road traffic accidents over the past few decades is a matter of great concern globally.

Objectives

To study the pattern of injuries in road traffic accidents among different age groups, reporting to a health facility in Haryana.

Materials and Methods Present study was carried out in PGIMS, Rohtak. Record of all injured persons who had attended emergency ward for road traffic accidents from January to December 2011, was collected and they were used for tabulating the pattern of injuries among different age groups. The value was then compared, compiled and analysed using the SPSS 20 software by applying tests wherever applicable.

Result It was found that more men were affected than female in all age groups, owing to the time they spend outdoors. Most common injury was head injury for 1-5 and 5-15 years age group. For age group 15 -45 it was

fracture femur which was more common, whereas, for older age group it was fracture pelvis and femur. Most common cause of accident was riding on a bike and head on collision followed by pedestrians being struck by a speeding vehicle. Almost 47% with accidents had a history of alcohol intake while driving.

Conclusion

Thus it was found that road traffic accidents are gradually increasing with the fast increase in technology and machineries. Stringent rules and measures need to be taken in order to curb the process so that it doesn't become an epidemic.

Key Words: Road traffic accidents, motor vehicles, injuries, fractures, pedestrian.

A descriptive study on injury related physical disability in urban Sri Lanka

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Background

Injuries remain the leading cause of death and disability among all age groups except 60 years of age or older. Road traffic accidents, occupations, violence and humanitarian crisis significantly contribute to injuries. Majority of amputations in Sri Lanka occur following non-accident, traumatic injury, such as stepping on pressure mines, grenade and mortar blasts, stray small arms fire and trap gun accidents. Sri Lankans also suffer from motor vehicle injuries and a high rate of train mishaps. Spinal injuries are also common in Sri Lanka. However, the magnitude of the contribution of injuries to disability is still not well documented in Sri Lanka. This study assessed the injury related physical disability among adults in Kandy Municipal Council area (KMC) in Central Sri Lanka, which is a low-income country.

Methods

A community-based descriptive cross sectional study was conducted to estimate the physical disability due to injuries among 2460 adults (18 to 59 years) in KMC selected using cluster sampling. Physical disability was measured using a Physical Impairment Assessment Tool and World health Organization Disability assessment schedule-Version II. An interviewer administered questionnaire was used to reveal injury related data.

Results

Prevalence of physical disability due to injuries was 0.6% (95% CI: 0.3-0.9). 13.6% (n=14) of physical disabilities were caused by injuries. Injuries reported included road traffic accidents (42.8%, n=6), falls (42.8%, n=6), war injuries (7.2%, n=1) and sports injuries (7.2%, n=1). Majority who underwent injuries were females (57.1%, n=8). There was no significant difference between males and females according to injury occurrence (P<0.05).

Conclusion

A significant proportion of physical disabilities were due to injuries and the majority of injuries occurred due to road traffic accidents. Prevention of road traffic accidents may be helpful to minimize injury related physical disability.

Key Words: physical disability, injury, reasons for physical disability, Sri Lanka

Using Web-based Information System to Strengthen Infrastructure Planning and Management in the Health Sector

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Background

With difficult terrain, poor communication network and limited resources, Nepal faces enormous challenges in maintaining the infrastructure and supplies required for quality health services, especially in remote hill and mountain areas. Ad hoc planning and crisis management have resulted in wastage of scarce resources due to lack of preventative maintenance, inappropriate location of facilities and unpredictable terrains.

Objective

To establish information systems that will enable rational planning and efficient management of construction, operation and maintenance of facilities for health services.

Methodology

An electronic database has been established, containing details of all health infrastructures across the country, from sub-health post to central level hospitals, including photographs and technical drawings. This has been made web-based with Google interface with GIS coordinates of all the health facilities in the database, which can be easily viewed using Google interface, enabling District staff to access and update information from anywhere in the country and allowing policymakers and planners at the centre to use the information with visual evidence for planning of new health infrastructure to know the conditions of the existing infrastructures.

Results

The infrastructure database has been used to develop a planned maintenance strategy. The availability of comprehensive and accurate data at the touch of a button resulted in improved annual and long term planning of building and maintenance. A series of models have been developed for infrastructure planning, based on different budget projections and priorities, linked to standard prototypes scientifically designed for different levels of health facility and geographical area using Google interface. Using Google in conjunction with spatial dimensions like population, accessibility, morbidity,

referral capacity and other relevant criterions site selection for construction of new facilities has been made scientific. By comparing standard designs against database information, planners identify gaps and needs from their desks and make more efficient use of site visits. The information system is called Health Infrastructure Information System (HIIS) and can be accessed using the Ministry of Health's web site www.mohp.gov.np

Conclusion

Electronic systems promote equitable access to services by overcoming some of the communication limitations of remote areas. They provide a sound information base for scientific trend studies and research to support evidence based planning and decision making. The transparency promoted has encouraged other donors to invest in health.

Key Words: Information system, Google interface, health infrastructure, planning, maintenance.

Intersectoral Action for the Health in Addressing Social Determinants of Health through Public Policies in Sri Lanka: Health in All Policies

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"Health" of the population in a country is not solely dependent on health sector activities alone. It is also determined by a variety of factors outside of healthcare services. These are referred to as the Social Determinants of Health (SDH). Though it is evident that the health sector in Sri Lanka has achieved remarkable health outcomes in relation to infant and maternal mortality, and life expectancy at birth, it is proved that wide disparities in health outcomes between individuals or population groups still exist in the country owing to the social factors such as, education, environment, working conditions, etc., which influence people's health. Therefore, to narrow the inequities in health, effective and sustainable actions across all levels of government are essential. Most recently, the concept of 'Health in All Policies (HiAP) was initially introduced by Finland in 2006. Subsequently, HiAP was recommended as a complimentary policy related strategy to integrate health into other sectors in the Adelaide Thinker in Residence in 2007. Consequently, Sri Lanka began intersectoral actions on health during the pre-independence era. Yet, the objectives of these initiatives were not strictly compatible with the concept of HiAP. However, it is important to look back upon these early inroads because they have laid the foundation for the implementation of HiAP. To reinforce this idea, it is important to consider the actions and recommendation made by the Commission on Social Determinants of Health (CSDH) in its final report. The report emphasizes that tackling the unfair distribution and access to power, wealth, and other necessary social resources must be started by integrating health in to other policies. In this manner, an overview of existing policies and actions in key public sectors, other than health, in the context of Sri Lanka is worthwhile. This analysis involves two components. First is to examine the health-related policies and actions of other sectors beyond health. This component consists of two approaches; the first is to assess the policies and actions of the selected thematic areas -- food security, transport, education, environment etc. The second is to examine the mechanisms used to integrate health component in to policies and actions of other sectors by conducting a round-table discussion with key stakeholders. The second component is to explore the best practices in the world regarding the implementation of HiAP using the available materials from the internet. It is evident that Sri Lanka currently does not have an integrated governance tool which deals with health in other public policies through policy formulation, implementation and evaluation at a national level. However, there are fragmented committees and task forces which address various health issues at different levels.

Key Words: Health in All Policies, Inequity, Social Conditions, Intersectoral action

Preparing Hospitals for Earthquake Disasters

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Hospitals are undoubtedly the most important lifeline systems that need to stay operational/fully functional during and after an earthquake strikes. A major earthquake can leave a large number of people severely injured, who will need immediate medical treatment. A significant share of these injured people requires intensive stationary care and surgeries, which can only be performed satisfactorily within a hospital. The resilience of the society to an earthquake disaster depends to a great extent on the integrity and functioning of its hospitals after the event. India is known to be situated in one of the world's most earthquake-prone regions and had several major earthquakes in the past. Ironically, there is hardly any hospital in the country which can be considered to be safe enough or to be fully functional after a major earthquake. The unfortunate scenario during past earthquakes has been that hospitals have collapsed or severely damaged resulting in casualties even among the doctors and paramedical staff, who are the most valuable human assets in the wake of an event. Therefore, there is a desperate need to prepare our hospitals for future earthquakes and a three-pronged approach is suggested: Firstly, each newly constructed hospital should be designed for the 'Operational' performance level, compared to the 'Collapse Prevention' performance level that is currently applied. This requires not only a modern design approach but also the use of non-conventional materials and construction technology. Secondly, a vulnerability assessment of all existing hospitals should be carried out in order to assess their expected performance during seismic impact. Thirdly, all existing hospitals should be prepared for future disasters through proper retrofitting and strengthening measures of both structural and non-structural components as well as preparedness training of health workers. During more

than a decade-long research collaboration between the Indian Institute of Technology Roorkee (IITR) and NORSAR (Norway) on earthquake risk reduction on the Indian subcontinent, the seismic safety of hospitals has been one of the key focus areas. During this collaboration some simple tools have been developed for the rapid and efficient assessment of seismic vulnerability of hospitals. The Pan American Health Organization (PAHO) distinguishes between structural, non-structural and functional safety of hospitals. The structural safety is related to the performance of the building structure; the non-structural safety targets non-structural components (equipment and services) and their integrity during and after a disaster, whereas functional safety addresses how hospital personnel are organized to respond in a disaster situation, if disaster plans and programs are implemented and if resources for disaster preparedness and response are in place. Naturally, this will require an intense interaction between health and technical personnel of the facility, disaster managers and engineers. This paper is a small step in that direction illustrating the tools that are available and the preventive measures that can be taken.

Key Words: Hospital Buildings, Earthquake Safety, Vulnerability, Retrofitting, Preparedness

Jack and Jill say 'No to Slips, Trips and Falls'

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Objective
To reduce the risk of patient falls in hospital settings.

Introduction
The evaluation and prevention of patient falls in hospital settings has always been a considerable challenge. Falls are a common cause of morbidity and the leading cause of unintended injuries in hospitals across the globe. Falls are strictly not acceptable as they have the potential to initiate a new line of treatment thereby increasing length of stay and overall costs.

Methodology
A Quality Improvement team was established to analyze the reasons of falls and identify gaps in the existing fall prevention strategies. Retrospective data evaluation depicted various areas of improvement. The members decided upon the strategies to prevent and reduce them. We tried to segregate the areas and the conditions in which the patients are more prone to fall. Right from policy decision to evidence based tool formulation called 'Comprehensive Apollo Patient Safety Programme' (CAPS) to training of the staff and improvising the mechanism of educating the patients and attendants, all were looked onto holistically. The trial run was done specifically in that ward area which had the highest volume and the maximum operational issues leading to high number of falls. It was later implemented across the hospital.

The strategies to prevent and reduce falls focused on the following goals:

- Formulate falls risk assessment form (CAPS Form) to evaluate a fall risk score.
- Devise a comprehensive policy for assessment and reassessment of fall risk.
- Incorporate medication review to identify patients at a high risk for falling.
- Identification of triggers, which could lead to change in patients' fall risk status.
- Separate ID bands for high-risk patients.
- Provide effective patient education through an audio-visual module.
- Reminder posters for both patients and staff sensitization.

Outcomes
The new form and policy underwent a trail run in one inpatient area (a Multi bed unit of 72 beds). Both surgical and medical cases were put in this unit providing adequate case mix for the study. The form was used across the care continuum i.e.at the time of admission, re-evaluation as per the CAPS score, assessment after the triggers were identified and after transfer from another area. Both new and old strategies were followed simultaneously to do differential analysis. After a successful trial resulting in zero patient falls during that period, we implemented it across the hospital, which resulted in 68.75% decrease in patient falls.

Conclusion
All patients in hospitals are 'at risk' at some point during their in-patient stay, and key risk factors for falls need assessing and addressing in their own right. Hence, not only thorough evidence based assessment on admission but also the frequency of reassessment or identification of events that trigger the reassessment plays a very vital role. A comprehensive policy incorporating the medical and surgical condition of the patient as well as the medication review further enhances the effectiveness of the tool.

Key Words: Quality Improvement, Comprehensive Apollo Patient Safety Programme (CAPS), Reduce the risk of patient falls in hospital settings, Identification of triggers for patients at high risk of falling, Provide effective patient education

Role of E-communication in Healthcare: Sustainable healthcare solution

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Background

Emerging new technologies have considerable potential for improving communication. E-communication in healthcare is a key to faster & efficient communication, reduction in paper consumption & increase in comfort level of end users1. Environmental policy of the study hospital is aimed towards energy and resource conservation.

Objective

To study the cost effectiveness of e-communication in healthcare.

Method

A comparative study was conducted in a tertiary care NABH, ISO 9001:2008 & 14001:2004 certified teaching hospitals. A validated questionnaire based survey was conducted in 11 non clinical departments of the hospital. Comparative cost analysis of the paper consumption of the hospital (pre and post e-communication) was performed using t-test of ten different categories of stationery used.

Results and Discussion

A majority of health expenditure in hospitals are wasted through misallocation and technical and managerial inefficiency within hospitals. A combination of hospital cost data with service statistics will highlight areas in which waste can be reduced 2. In order to have a paperless system our in-house IT department employees undertook the task of creating a software program catering to the needs of the hospital. A significant reduction in total paper consumption was found after the implementation of e-communication (5% level of significance, p value <0.05). Operations team of the hospital used the highest no of A4 size papers (Rs. 7480/100 inpatients) as compared to MRD (Rs. 3453/100 inpatient) Radiology (Rs. 1707/100 inpatients), Billing (Rs. 898/100 patients). Frequency of raising General store indents markedly increased after starting e-communication leading to decreased manpower consumption and increasing comfort level to the end users.

Conclusion

Implementation of e-communication has resulted in a significant reduction in the cost incurred towards running the facility leading to surplus, giving more comfort to the end users and saving time. e-communication also complying with the environmental policies i.e. environment conservation and resource conservation which helps to generate more time towards patient care.

Key Words: e-communication, healthcare, cost effectiveness, cost reduction

Objective Evaluation of Overcrowding in the Emergency Department: A Study in a Tertiary Care Hospital in India

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Background

Emergency Department (ED) crowding is an important but seldom addressed problem in the Indian healthcare scenario. The problem is particularly magnified in public hospitals due to the skewed distribution of healthcare facilities which are concentrated in urban areas and are beyond the reach of the majority who reside in rural areas.(1) ED crowding has traditionally been perceived subjectively by practitioners, there has been no attempt to quantify its magnitude, thus partly contributing to the failure in the identification and adequate redressal of this problem. The National Emergency Department Over Crowding Study (NEDOCS) tool is one such attempt to objectively measure overcrowding.(2)

Objective

To evaluate the relationship between subjective assessment of EMD staff regarding crowding and the objective data obtained by implementing NEDOCS (National Emergency Department Overcrowding Study) scoring system.

Methods

National Emergency Department Over Crowding Study (NEDOCS) tool was developed in response to the lack of a standardised definition or scale to compare overcrowding in the Emergency Departments of various hospitals. This is a simple tool to determine overcrowding and assist in administrative decisions with regard to functioning of the EMD. The study was conducted over a period of 4 weeks in Nizam's Institute of Medical Sciences- a tertiary care teaching hospital. Data was collected at 3 hour intervals and at each instance the subjective feeling of overcrowding perceived by the incharge nurse and EMO was scored on a 5 point Likert-type scale along with the data required as per the NEDOCS tool. Physician and nurse interrater agreement was assessed using Cohen's weighted kappa. NEDOCS scores were compared with the subjective assessment using linear correlation method.

Results

Of the 168 sampling instances in only 140 instances (83%) comprehensive data was available for use in analysis. The physicians rated the ED as overcrowded (>=3) at 115 (82%) of the sampling instances, nurses 127 (90.7%) and the composite score (average of nurse and physician scores) indicated that the ED was overcrowded 91 instances (65%).The interrater agreement as per Cohen's weighted kappa for emergency physician and emergency nurse was κ= 0.57 (95% confidence interval = 0.48 to 0.65).The Pearson correlation coefficient for testing the association between NEDOCS and subjective scoring was r =0.896 (p=0.0396) suggesting significant correlation.

Conclusion

The NEDOCS tool correlated well with the staff perception of overcrowding and its validity was thus established by this study. Objective assessment of overcrowding helps healthcare managers to take specific measures so that timely emergency care in the ED is not affected. NEDOCS is one of the simplest tools for estimating emergency department overcrowding and can be easily replicated in

various emergency settings. Assessment of objective overcrowding may help in developing institutional wise overcrowding patterns and also help public authorities in better planning of future healthcare projects.

Key Words: Overcrowding, NEDOCS, Emergency Department

Role of Health Institutions in Accelerating Rural Development in Tripura

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The term 'institution' is defined in many ways depending on discipline, purpose or problem under study. Institutions refer to all those activities that contribute to human development for building human capital. Therefore, investment in areas like education, health and sanitation, communication, rural electrification, rural credit and so on, is considered to be investment towards the process of formation of human capital or human development. Availability of health institution plays a crucial role in maintaining the quality of human resources. These facilities can therefore, be regarded as an important indicator of economic and social well-being. Not only do they constitute the most basic human needs but they also contribute greatly to the efficiency of the labour force. Tripura (trĭˈpʊrä), state (2001 provisional pop. 3,191,168), 4,036 sq mi (10,453 sq km), NE India, bordered by Bangladesh on the north, west, and south, and on the east by the states of Assam and Mizoram. The capital is Agartala. Tripura lies in a mountainous region but has lush lowlands with cane brakes, swamps, and dense jungles. Tripura is one of the north-eastern states of India which has traditionally been considered as backward or lagging. Characterized with high levels of poverty and economic backwardness, Tripura is predominantly rural. A group of houses in rural areas having population below 5 thousand and agriculture as main profession is called village. However, there have been attempts for progress with support from various institutional factors facilitated by the state. Here all the factors like Health Sub-Centre, PHC, S.D. Hospital, Allopathic Doctor, Homeopathy, Ayurved, Quack, Ojha, Latrine, Water and Sanitation facilities have been considered to identify the health disparity in the study area. An effort is made to find out the effect of health institutions on the study area. Z-score method (Gaur. Archana, 1985) has been adopted to prepare an appropriate index to rank the villages on the basis of identified Health Institutions and to analyse the existing scenario for our study area. The results obtained have been crosschecked using the participatory approach in the later period.

Fostering innovation by the recognition and inclusion of tacit modes of learning and training in medical education

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Medical education, as well as formal education including, but not limited to, science and engineering, explicitly emphasizes the transfer of essential skills and knowledge from the teacher to the taught. However, implicit in all learning activity is the ability to gain an intuitive understanding and appreciation of the subject, resulting in enhanced proficiency in practice. While such attainment is greatly dependent on the rigor of formal educational programmes and the duration of practical training, studies of skilled workers in several professions indicates that these are not the sole determinants of proficiency. There also exists a less tangible component of what is colloquially termed 'experience' which, on closer inspection, is the sum of tacit, as opposed to explicit, skills and knowledge. Tacit knowledge and skills are typically acquired by non-formal and implicit means and not usually tested in formal education, but are known to enhance the performance of professionals in many spheres of human activity. However, the importance of tacit knowledge has not been adequately examined in the field of medical education that, like all other science-based professions, is ultimately dependent on objective, empirical facts as well as deductive reasoning based on known and proven principles. Appreciation of tacit knowledge by educators can powerfully inform pedagogy, not only in medicine, but also in ancillary and allied sciences, potentially resulting in powerful synergies. This paper highlights historical examples of the contribution of several fields in unanticipated ways to advancements in medicine, and also how medical contexts themselves have led to scientific advances not necessarily related to medicine. In practice, this strategy of highlighting not only actual scientific information, but also the frequently subjective process of scientific discovery and advancement, brings to the fore live examples of tacit knowledge and understanding, and presents influential role models for future innovators. The recognition of alternate channels of knowing, understanding and doing, can powerfully inform and transform current pedagogical structures with minimally disruptive effects, and merits conscious adoption by teachers and trainers of medical (and scientific) professionals.

Key Words: Tacit knowledge, modes of learning, creativity, medical education, medicine and allied sciences

Operating Room Services in Level I Trauma Care Facility in India – A costly Affair?

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Introduction

Operating room services are one of the major cost centres of a hospital and also revenue generating centre. The cost associated with provisioning of operating department services depends on the resources consumed and the unit costs of those resources.

Objective

To calculate cost of operation theatre services at Jai Prakash Narayan Apex Trauma Centre, AIIMS, New Delhi.

Methodology

Study was carried out at Operation Theatre Department of JPNATC, AIIMS from April 2010 to March 2011 after obtaining approval from concerned authorities. This study was observational and descriptive in nature. The traditional (average or gross) costing was used to arrive at the cost for provisioning of OT services. Cost was calculated under two heads as capital and operating cost. Annualized cost of capital assets was calculated according to methodology prescribed by World Health Organisation in manual for analysis of hospital costs and running costs were taken on actual basis, thereafter per day cost of OT services was arrived.

Results

Average number of surgeries performed in trauma centre per day is thirteen.Annual cost of providing operating room services at JPNATC, New Delhi was calculated to be INR 19,72,98,704/- (US$ 3,653,679), while per hour cost was calculated to be INR 22, 626.92/- (US$ 419).

Cost summary of Operation Theater services at JPNATC, AIIMS (in INR)

	Annual	Monthly	Daily	Per Hour
Capital Cost				
OT Building	1627609	135634	4459	186
OT M & E	61596228	5133019	168757	7032
Total	**6,32,23,837**	**52,68,653**	**1,73,216**	**7,217**
CSSD Building	216841	18070	594	25
CSSD M & E	109008	9084	299	12
Laundry Building	235402	19617	645	27
Laundry M & E	604870	50406	1657	69
Manifold Building	5308	442	15	1
Manifold M & E	277496	23125	760	32
Total	**14,48,925**	**1,20,744**	**3,970**	**165**
Operating Cost				
Manpower	**6,57,43,387**	**54,78,616**	**1,82,621**	**7,609**
Consumables				
Neurosurgery - Medicine	1051076	87590	2880	120
Medicine	3664688	305391	10040	418
Surgical Store	13118974	1093248	35942	1498
Surgical Instrument	3557550	296462	9747	406
Surgical Ortho	11927440	993953	32678	1362
Surgical NS	7863785	655315	21545	898
Surgical OT	7328306	610692	20078	837
Sutures	7533222	627769	20639	860
Gen. Consumables	2133207	177767	5844	244
Linen	940482	78374	2577	107
Disposable Linen	31438	2620	86	4
Packing Room	226578	18881	621	26
Stationery	29294	2441	80	3
Total	**5,94,06,042**	**49,50,504**	**1,62,756**	**6,782**
Support Services				
CSSD	1879079	156590	5148	215
Laundry	265676	22140	728	30
Manifold	221300	18442	606	25
Biomedical waste management	52897	4408	145	6
Total	**24,18,953**	**2,01,579**	**6,627**	**276**
Engineering Maintenance Cost (OT and Support Services)	**50,57,561**	**4,21,463**	**13,856**	**577**

Conclusion

The majority of the expenditures are made on human resource (33.63%) followed by OT capital cost (31.90%), consumables (29.97%), engineering maintenance cost (2.55%), support services operating cost (1.22%) and support services capital cost (0.73%). Of the total cost towards provisioning of OT services, 32.63% is capital cost while 67.37% is operating cost. Findings of this study can be taken as baseline costing data for planning of trauma care facilities not only in India but SAARC region as well, especially in the light of injury epidemic which is emerging as one of the major cause of morbidity and mortality in developing countries. (1US$ = INR 54/-).

Key Words: Trauma, operating department, costing, operating room, traditional or average costing

Maternal & Child Health-Nurses Midwives Initiative (MCH-NMI) Project

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Background

India has one of the highest maternal mortality rates in the world 212 per one lakh live births. No doubt the issues of the survival of women and children are extremely crucial in the state of MP which has even higher MMR at 335. The majority of the maternal deaths occur among rural areas and urban slums. Madhya Pradesh carries India's highest malnutrition burden, with 60% of under 5 children malnourished. The problem of persistently high maternal and infant mortality was

discussed with concern in Society of Midwives India (SOMI) meeting at Indore, Principals and faculty members of six nursing colleges discussed and planned to work together to make a difference in the health status of women and children. This project, MCH-NMI was taken as an effort to improve the health status of mothers and children in Indore district (MP) by using the 1870 hours of community health nursing (as prescribed by INC in B. Sc. N and M. sc. N) as resources in the form of nursing students to provide services in selected 30,000 slum population.

Objectives

100% institutional deliveries or conducted by trained health workers; Provide antenatal and post natal health care services to the 100% of the mothers; Complete immunization of all children under the age of 5years; Referral and/or provision of treatment to children of grade 3rd and 4th of malnutrition; Encourage use of contraceptives by 85% of eligible couple. Provide reproductive health education to the adolescent girls and boys; Motivate and help school dropout girls to appear in open school examination of class 10th and 12th.

Methodology

Each nursing college was assigned 5000 population of urban slums. MCH- NMI Project was inaugurated on March 10th 2010, started from the month of July 2010. An MOU was signed between Government's Local Health Authorities, ICDS Dept and TNAI and SOMI Presidents to complete the project in three years and submit the report to state health dept. Baseline survey was carried out to prepare community profile. Weekly clinics at anganwadi's were organized for antenatal check-up & immunization with government health workers. Health education on topics: antenatal care, diet, exercise, hygiene, mother craft, breast feeding and methods of family planning, STD was delivered regularly. Home visits were also conducted.

Findings

Institutional deliveries were increased from 90.5% to 96.55%. Registration of antenatal mothers increased from 92.15% to 100%. 100% antenatal mothers were immunized for Tetanus Toxoid. The status of complete immunization also increased from 51.09% to 63.93%. The incidence of malnutrition among under five children decreased from 48 (13.11%) to 21 (6.36%). Use of contraceptives increased from 47.18% to 55.45%. One girl could appear in open school examination for class 10th.

Conclusion

Since this innovative project is self-sponsored, run by nurses and midwives; not getting any funds from the Government, significant achievement of objectives denotes the success of this innovative project. This project is a small step towards improving the health of mothers and children. Similar projects can be initiated throughout India by nursing schools and colleges.

Innovation through Midwifery Model of Care: A Midwife-Led Clinic

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Background

A Midwife-led clinic is generally run by fully qualified registered nurse-midwives to utilize their knowledge, skills, judgment and authority in the provision of primary women's health care services while maintaining accountability for the management of care provided in accordance with midwifery/ nursing council of one's own country. The level of professional autonomy will vary both within countries and across the world but is generally high and many clinics offer what may be termed 'advanced practice.' The MMC: Midwife means to be with the mother. And MMC is providing her individualized education, counseling, and prenatal care, continuous hands-on assistance during labor and delivery, and postpartum support. Our Midwife-led clinic of Choithram Hospital and Research centre was established on 9th April 2011 in a view to reduce the national rate of CS which goes above the 15% mark of our country & promoting naturally birthing with the aim to provide care which is holistic in nature for women and based upon the best available evidence. This clinic which works by networking with midwives, obstetrician, pediatrician. The team works in community settings to render the services to women. Vision & Mission of Midwife-led clinic: The vision is to promote & provide Safe, Sensitive, Skilled care to mother's wellness and enhance the health status of the new born. Mission is to build mother's self confidence in handling childbearing with appropriate information and skills in a way that enhance participation and facilitates decision making & promote trust and mutual respect between the midwife and the women. Activities-Maternal and child health promotion includes Antenatal exercises, FHS monitoring, Breast self-examination, Antenatal diet Plan, Garbh Sanskar: Non Pharmacological intervention for labor like Lamaze, Bradley, Support during labor,Sp6 point, birthing ball, Postnatal exercises & Care ,Breast feeding, Diet Plan, contraception, new born Care: Initiation of early breast feeding, Conducting Evidence based research all in collaboration with SOMI & ICM for promotion of safe motherhood. Data on the Successful Running of Midwife Led Clinic: During the year 2011 - 2012, 540 women attended the clinic which was increased to 822 during the year 2012 to 2013. Birth preparedness classes were attended by 953 antenatal registered mothers. Lamaze techniques were taught to 587 antenatal registered mothers. Opinions regarding the classes led by midwives were taken from 513 mothers who gave a positive response on the session and performed exercises and managed during labour. Mothers attending our clinic mentioned that the Lamaze technique helped in relaxing the muscles , reduced their anxiety and negative thinking and gave a feeling of comfort during labour which was otherwise a terrifying process for them. After attending Lamaze technique their child birth became a memorable experience for them.

Conclusion

Midwife-led clinic run by us have assumed distinct role in these two years. Community has appreciated the effort and even the obstetricians are diverting their patient to natural birthing which is a boon to the society.

Key Words: Midwifery Model of Care (MMC), Society of Midwives India (SOMI), International Confederation of Midwives(ICM)

COSH - Team Matters

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Introduction

My Vision was to establish a Multi-Speciality Hospital to serve the local community by providing scientific perfection in Health Care where the need is the most. Most of the time during crisis we have to refer patients to a specialized institution which is far away. If each locality had an institution the public would be benefitted. Our aim is to establish a comprehensive system which should provide health care in suburban areas. The growth so far is due to TEAM WORK. Our team comprises skilled professionals with aptitude for treating patients with practical and scientific knowledge.

Objective was achieved by putting the team first. Tuning the team meant delivering the good. This is measured by the core team which has been retained with COSH for a duration ranging from 6 years to 12 years and 60 percentage team members come under this category.

The quantitative result which has proved COSH successful is 60 percent permanent staff since the beginning 2001

Methods

Every healthcare professional has to have education and attitude .If that combination is met with, serving healthcare becomes sincere and dedicated. If basic education is provided without needs of every day met with, then the flow of passionate work cannot be expected.

So the criteria which was met with for every individual can be divided into

Education

- All trained staff given basic diploma
- Consultants upgraded in their field
- Physiotherapist completed post graduation
- ACLS, BLS classes conducted
- Regular classes on NABH
- Registration for conferences done through COSH

Social Factors:

- Housing projects for all long term team members (completed 6 years)
- Vehicles provided to staff for transportation.
- Staff children's school education, Insurance policies, travel and medical expenditure looked after.
- Food served free of cost to all staff on duty.
- Health education and registration into gym done through COSH.
- A Non-Alcoholic atmosphere was accepted.

When all this was met with, a Holistic Team Member was able to deliver committed healthcare to the patient.

The performance was measured by:

- Feedback forms from public.
- Best Team Award. ("Serving With Smile" CONDUCTED BY INDIAN MEDICAL ASSOCIATION)
- COSH judged 3rd Best Orthopaedics Hospital by "THE WEEK" magazine survey issued on Nov 14 2010.

The data is maintained about Education, Transformation and Public Response over a period of 12 years.

Results

COSH with a humble economical beginning which started with a single room has grown into a 60 bed Multi Speciality Hospital expecting its final audit with NABH, Growing strong into expansion with another 100 beds meeting science and society, bridging economy on a joyful roll making healthcare socially acceptable, enjoyable, transparent and warm and satisfied to every patient walking into COSH.

Future Plans: • COSH 100 Bed Hospital with Cath lab, CT scan and MRI Lab. 2013 – 2015

- COSH Green Shades
  Home for Terminally ill
  Psychiatric Rehabilitation
  Community College
  2015-2018

Professional airway management using a small artificial, mobile lung system for EMS operations (ECMO)

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Purpose

ECMO systems are mainly used in the hospitals to treat patients with acute respiratory distress syndrome (ARDS).

Even more challenging is the transport of ARDS patients from a regular hospital to a specialized airway management clinic. Major problem is the stability of an efficient airway management system in intensive care units or helicopters. Big machines and special trained Physicians are necessary to try to foresee ECMO troubles while therapy is running. The research group of CUAS researched in the field of biomedical engineering to solve technical problems with ECMO in order to make patient's transport more secure. One solution is the invention of a small artificial lung device (ECMO) with an integrated blood pump. CUAS tested the artificial lung to increase the gas transfer performance.

Method

Construction of a two-chamber hollow fibre oxygenator including a blood pump with four possibilities of blood/gas-flow direction to enhance gas transfer. Comparison of the different oxygen saturation and carbon dioxide elimination rates through different gas-blood flows. Identifying problems causing abnormal pressure gradient and plasma leakage by using different membrane materials during blood testing.

Results

Microporous membranes such like commonly used polypropylene membranes have the highest oxygenation rate, but also have the disadvantage of water molecule bridges and plasma leakage. This often occurs when the system is running with high pressure. But there are leak-proof plasma membranes (such like polymethylpenten membranes) which remain even during tough conditions. These membranes have a lower oxygenation transfer rate, so this has to be compensated by increasing the diffusion surface. CUAS divided the oxygenator chamber into two compartments to increase the partial oxygen pressure by different gas/blood-flow directions and raise performance of oxygen and carbon dioxide transfer rate.

Conclusion

In the blood tests of CUAS, a mixture of at first counter current flow and then concurrent gas/blood-flow created a higher oxygen transfer performance of the ECMO lung and reduced size. Using PMP membranes, the risk of plasma leakage is reduced and longtime usage possible (supported by coating).

Key Words: ECMO, ARDS, mobile lung, patients' transport

First-Movers and Early Adoption of Technology: It's Impact on Firm Performance

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The purpose of this study is to explore the construct of early technology adoption and its impact on firm performance. The study takes into consideration the concept that early adoption of, "…high technology provides firms with significant competitive advantage in their product market." (Chung-Chiang, 2005). In its publication of Americas Best Hospitals, US News and World Report included, "…better equipment and personnel and improved technology…" as one of the indices of hospital reputation (Merrill, 2000). Firms with high technology have a greater reputation than those without. Firms with better reputations have easier access to capital, supplies, employees, and customers, and as a result, have better competitive advantage over other firms (Barney, 1991). According to Lieberman and Montgomery, first-movers create an asymmetry enabling them to gain a head start over rivals. "Once the asymmetry is generated there are a variety of mechanisms that may enable the firm to exploit its position; these mechanisms enhance the magnitude or durability (or both) of first-mover profits." (Lieberman and Montgomery, 1987). Early adoption brings new customers and consequently increases profits. According to Roberts and Dowling, based on a resource-based view, firms with assets that are valuable and rare possess a competitive advantage and may expect to earn superior returns (2002). According to Barney and Grant the firms whose assets are also difficult to imitate, such as superior technology, may achieve sustained superior financial performance (1991). The early adopters, by bringing new technology earlier than others, make it possible for the firm to possess, "…assets that are valuable and rare, and difficult to imitate", thereby increasing the firm's competitive advantage to earn superior returns. Based on the study of Vowles, Thirkell, and Sinha (2010-2011) regarding the different factors that determine the adaption of a radical innovation, the study tries to understand the role and influence of innovators and innovation champions within the adopting firm. Secondly, the study also tries to validate the influence of personnel in the adopting firm and how their training and knowledge level affects early adoption. Thirdly, the study examines the role of self-control in early-adaption, and its impact on firm performance. This will also provide future opportunities to investigate the role of early adoption of technologies and therapies and their impact on firms. The study is all the more important as there lays a great opportunity for the early adaption of genomic medicine, which could be a breakthrough in human health. Effective adaption of this huge breakthrough coupled with ethical and professional self-control can lead to long-term profits for firms (Clayton, 2003). In addition to the theoretical support it derives from literature, this study is also supported by factors that contributed to the success of Cancer Treatment Centers of America, a successful first mover. By validating the factors, the study provides a frame work for firms to follow to improve their strategy of technology adoption, and consequently ensuring competitive advantage.

Key Words: Firm performance, early-adoption, first-mover profits, superior technology, competitive advantage, genomic medicine, radical innovation.

German concepts in incident (MCI; CBRN, disaster) management

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Introduction

Germany is a federal country with 16 states. EMS services are organized by state acts and create quiet different organization models. The majority of the states dedicate the communities (cities and counties) for EMS services. Especially the metropolitan cities run EMS together with fire departments, while counties delegate more often private organizations like red cross or other services, to provide EMS services for the citizens. Major disasters create need for additional resources. The states provide therefore disaster forces with volunteers. Special action plans are created for major disasters, CBRN accidents, high-risk events and natural disasters. The special action plans for the fire department of Cologne/Germany for high-risk events and CBRN accidents are explained. The development was based on real accidents and the lessons learned from them.

Action plan

a) High-Risk Event (HRE): In Germany some formulas were developed (e.g., Cologne–Maurer Formula) to prepare the necessary EMS resources for the management of major events according to the risk of incidents. The Maurer formula includes the kind of an event, expected visitors, additional number of VIP persons, experiences and additional information. With the help of this tool the number of EMS and additional medical resources can be calculated and create the basis of the action plan for the specific event.

b) CBRN accident: Around the City of Cologne 30% of the Chemical industry of Germany is located. In the past some major chemical accidents occurred. Additional with the information of other accidents an action plan for chemical accidents with an unknown chemical and acute injured staff personal / patients was developed. It provides a plan for in field measurement and blood and urine sampling of affected staff people. The samples are screened in a special lab for 25 of the most acute toxic chemicals, which occur in the area. With positive results, patients can treated quickly, with negative results fear can be reduced.

Conclusions

Accidents and disaster create concerns in each population. People expect detailed actions plans from the authorities and complain quickly, if there is a lack of plans and / or resources. In the City of Cologne special action plans help to prevent additional damage and manage accidents in best way.

Key Words: Disaster management, CBRN, High-Risk Events, EMS, Fire department, action plans

Use of Geographical Information System to provide effective Pre Hospital Care

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Introduction

Road traffic accidents (RTA) are one of the most important problems being faced by modern societies. Resultant mortality and serious economic loss caused by road accidents demand a continuous attention in accordance with the spectacular growth in road transportation. Statistics reveal that India's motor vehicle population is hardly 1 % of the world, while its share in world road traffic accident is nearly 6%. About 61% accidents occur due to heavy vehicles in the country. The National Highway accounting for 25% of such accidents, 34% of deaths and 28% of injuries on road. There are four components of pre-hospital time (activation, response, on-scene and transport interval). The entire conceptualization of RTA is largely dependent on data – primarily the data from FIR lodged with various police departments. Collation of data requires consistency and accuracy in location reference and simultaneous consideration of FIR Data, Roadway Inventory Data and Work-zones. Analysis based on these different streams of data and management of RTA requires patience and skill. Different sources of data makes the process complex, though preference is for general, uniformed aggregate approach i.e. a macro level approach, which includes micro analysis as well. To deal with these limitations, to make the actions visible, to identify accidents patterns, Geographical Information System is a gateway to move ahead.

Aim

To assess the effectiveness of pre-hospital and emergency care and to make recommendations to meet the growing need for organized emergency services in the community.

Methodology

The foundation of traffic safety work is information. The primary task is to establish a traffic accident database and then to maintain and analyse the same. The use of computers makes this effort more comprehensive and productive. Till now the databases are in the form of linear record file system. To identify the accident prone zones in cities, using GIS, the road accident data for a limited period along with accident particulars like date, location, type of vehicle involved, number of persons injured or died are included in the GIS database. Accident analysis is done with the aim of identification of high accident rate locations and safety deficient areas. Based on the result, suggestions will be provided for effective pre-hospital care. The Pre hospital care can then be planned and measures taken to implement successfully with the purpose of reducing mortality.

Conclusion

The GIS (Geographical Information System) is a graphical information system that supports display and analysis of spatial data and has revolutionised making and use of maps for data interpretation. The powerful aspect of GIS is its flexibility in modeling special objects to suit particular application requirements. It helps in

understanding the characteristics of concerned area in aggregate by taking care of accident data and by linking the data to geographical features. Hence, the development of GIS will be of immense help to provide quick and efficient emergency care during any emergency situation occurring due to accidents.

Availment of Swasthya Vahan Sewa(102) and its constraints in a rural block of Haryana

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Background

The lack of proper transport facility severely affects the access to emergency services. Delay in reaching a health facility is one of "the three delays" . (1)delay in the decision to seek care (2) delay in arrival at a health facility and (3) delay in the provision of adequate care. The Government of Haryana thus launched a service branded as "Haryana Swasthya Vahan Sewa No.102" on 14th November 2009, with the main objective of providing assured referral transport for pregnant women in labour or newborns, as well as attending to other emergencies.

Objective

Objective of the study was to look out for the availment of Swasthya Vahan Sewa(102) services and its constraints in a rural block of Haryana.

Methods

Study was done from January- March 2013, in block Lakhan majra, which has 29 villages under it. 1 entire PHC was chosen which has 5 villages and all the janani surakshya yojana (JSY) beneficiaries were incuded in the study. They were questioned about their experiences and the constraints to the utilization of the services provided. A total of 120 beneficiaries were identified and questioned.

Results

It was found that more that half of them 70/120 (58%) didn't know about the JSY scheme. Rest of them i.e 50/120(41.6%) knew about it, but only 19/50 i.e 38% had availed the services on their own. The main reasons cited to non-utilisation of the service was lack of information about it followed by convenience in reserved vehicle and time taken in arrival. They found the 102 service useful, but the response of the system was not immediate.

Conclusion

In developing countries the referral system for emergencies is often weak. Any breakdown along the path from home to health facility, or between health facilities, can prevent women and newborns from accessing emergency care. The problem is the transportation, the referral system, which needs to be seriously thought over and improvised.

Key Words: Swasthya Vahan Sewa, 102 ambulances, deliveries, newborne, JSY.

EMS & CASEVAC- The peculiarity and complexities during EVAC from sea

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Throughout history sailing has been instrumental in the development of civilization, affording humanity greater mobility. More than 90% of global trade is carried by sea. Maritime trade accounts for nearly US$ 380 billion in freight rates, equivalent to about 5% of total world trade. Throughout the last century the shipping industry has seen a general trend of increases in total trade volume. Shipping is perhaps the most international of all the world's great industries and one of the most dangerous. Trade at sea can also sometimes endanger the persons working onboard and may at times require medical support of the sick and wounded persons at sea. Many lives are lost (seafarers, fishermen and passengers) due to safety related accidents and incidents on ships.

Aim

This article aims to highlight the issues pertaining to the casevac of persons at sea. It also attempts a brief introduction and describes the background for developing the evacuation scenarios for a variety of events at sea in differing climatic conditions.

Method

An observational study was carried out based on the experiences of the author along with a comprehensive review of literature available in journals and on internet

Discussion

The role of EMS involves the receipt, stabilization, holding, institution of medical care and evacuation to the nearest and most appropriate facility. Evacuation encompasses both medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC). There can be a variety of situations requiring provision of EMS / Casevac at sea like Medical / Surgical / Orthopedic ailments, Accidents, Fire etc etc. Before initiating evacuation, special care is required to be exercised on planning issues. A nodal agency under the aegis of Armed Forces, DG Shipping & NDMA may be made responsible for the overall coordination of efforts. The adoption & practice of checklist alongwith regular training / drills will improve the casevac outcomes. It covers issues like (1) location of casualty, nearest air / ship asset, nearest hospital, (2) Communication, (3) Modes of transportation, (4) Facilities / expertise available onboard, (5) Training / Drills on medical aspects of all seafarers

Conclusion

Evacuation at sea is a complicated, resource intensive act requiring special skills. Adequate pre-hospital care and timely evacuation to medical units is key to saving a life. Casualties have an enormous impact on the morale of the crew. While the transportation of casualties at sea is

difficult, it certainly is feasible. It should be a trained task. Medical support including casevac at sea requires close coordination between various agencies and requires plans, which are flexible, adaptable and practical. Having a well rehearsed and a foolproof comprehensive medical support plan is a pre-requisite for a successful and timely evacuation of casualties.

Key Words: Casevac, Medevac, NDMA, DG Sipping

Patient Safety Concerns in Aeromedical Evacuation

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Background

The way battles are fought today has seen a sea change. A modern day conflict, short of a full scale war is characterised by rapid, short duration, high intensity combat resulting in a large number of casualties requiring on site medical attention. Unlike conventional warfare, where deaths in combat are acceptable, there is a strong socio-political imperative to absolutely minimize casualty rates and above all, deaths in short -of -war military operations. This has prompted Armed Forces the world over to develop a highly efficient casualty air evacuation (CASAEVAC) system that can exceed the standards of care available at field medical units and even transport unstable patients with one or more organ dysfunction to rear echelons with speed and efficiency. However contrary to popular perception, aeromedical evacuation is not without hazards and constraints, which needs to be carefully considered while deciding on evacuating a patient by air. Two historical missions which exemplify this philosophy are the evacuation of five critical battle casualties from Bagdad and Talil to Kuwait with 'on board' ventilatory support using a C-130 aircraft and the transport of four mechanically ventilated burns patients from Gaum to Brooke Army Medical Centre in a C-141 aircraft, a flight which lasted for 20 hours .

Aim

This article aims to highlight the issues of patient safety faced during aeromedical evacuation of casualties.

Method

Selective review of peer reviewed literary evidence and theory regarding patient safety issues during aeromedical evacuation.

Discussion

Aeromedical evacuation has definitely proved to be a boon in evacuating casualties. However, it is important to understand the stress of the flight environment and its effects on the patient, his physiology and medical equipment for a successful CASAEVAC. Changes in altitude can have disastrous effects on the casualty because of diminished ambientair pressure, which allows gases in closed spaces and tissue to expand rapidly. Air transport is absolutely contraindicated for patients with untreated pneumothorax, gas gangrene or air trapped in the cranium and those who have recently undergone abdominal surgery. Patients who are anemic, in respiratory or cardiac distress, or immobilized in cast require special consideration like planned low – altitude flights. Other aero-medical issues pertain to forces ofacceleration, noise, vibration and decreased humidity, which are additional challenges for effective evacuation of casualty.

Conclusion

Air evacuation with on board intensive monitoring and care is the preferred method of evacuation of the critically ill and will become routine in future. Recent advances in the form of user friendly, sophisticated, miniature monitoring and life support equipment can create an intensive care unit (ICU) in the sky, which can offer state of the art critical care to casualties right from the battlefield to tertiary care centres. However, these technological advancements need to be backed up with properly trained medical teams who are well versed with aspects unique to aero-medical evacuation, including the effects of flight physiology on medical conditions, oxygen limitations and distinctive medicare requirements

Key Words: Casualty air evacuation

Health Literacy for Patient Safety in EMS

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Background

From the days of Institute of Medicine's landmark publication "To Err is Human", Patient Safety has over the years assumed the center stage of safe and quality healthcare delivery. Emergency Medical System has been the mainstay of pre hospital care and cannot remain isolated from the need for patient safety protocols in its operational domain. Various factors contribute to adverse events in EMS settings and many of such factors can be suitably addressed by the co-operation of a health literate patient. Health literacy-"the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions"- has been identified as a cross-cutting quality-of-care issue by the Institute of Medicine. Patients are increasingly taking an active role in medical decision-making, choosing quality providers, self management and safety efforts in terms of informed consents, advance directives and various such issues.

Aim

The Article aims to correlate the aspect of health literacy for improved patient safety in EMS to address patient-centered goals of improved access, continuity, communication and coordination, cultural competency and focused quality care over time.

Methodology

A selective review of peer-reviewed evidence and theory regarding relationship of Health literacy and patient safety was conducted. Semi-structured key informant interviews were conducted to understand the impact of

health literacy on patient safety in EMS. On the basis of the literature review, examples of health literacy program implementation and Baker's Model for Health literacy, a conceptual framework for integration of Health literacy for patient safety in EMS has been proposed.

Findings

Limited health literacy is a barrier for understanding health information and has been identified as a risk factor for overuse of the emergency medical services. Patients with limited health literacy have a preference for emergency care, as the services are perceived as better. There is definitive relationship between health literacy and (1) ED Visits, (2) potentially preventable hospital admissions; (3) Medicine compliance; (4) Involvement in care delivery; and (5) enhanced communication between provider and users of care. The model describes that the individual health knowledge is dependent on his/her prior knowledge and learning skills. It is also influenced by the culture and norms of the individual. Health related print and oral literacy programmes need to be implemented to enhance the ability of individuals to understand and communicate about health information. This enhanced literacy leads to assimilation of new knowledge, behavioral changes and positive attitude to achieve the ultimate aim of improved patient safety and better health outcome.

Conclusion

The health literate clientele will support the highly charged EMS environment rather than burdening it with uncontrolled movements, unnecessary calls for emergencies, inadequate medical history and records. Health Literacy will enhance safety during transport, patient handoffs and subsequent care delivery, as well as ensure reasonable and accurate communication between providers and users.

Key Words: Health literacy, Patient safety, EMS, Communication

Updating vital registration system the need of the hour: an experience of perinatal mortality in the slums of Ludhiana

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Background

Mortality data are important indicators of population health and are crucial for setting priorities for health interventions and research. A reliable assessment of disease-specific mortality rates is not yet possible in many parts of India, either because the underlying cause of the terminal illness was never known or because the relevant information was not recorded. Even though India passed the Registration of Births and Deaths Act way back in 1969, the percentage of registration of vital events is still low.

Methods

A population based, cross-sectional study was carried out in the 91 slums identified in Ludhiana (population approximately 2,50,000), to determine the causes of perinatal mortality in the population under study, through in-depth interviews using a social autopsy tool integrated with a standard verbal autopsy tool. Neonatal and Intrauterine Death Classification according to Etiology (NICE) was used to classify the perinatal deaths. The data was compiled and analyzed using Epi-Info v6 software.

Results

In the study period of one year, a total of 558 perinatal deaths were found, of which there were 352 still-births and 206 first week deaths. Only 18.5 % of the perinatal deaths were registered at the Registrar Births and Deaths. Less than one-thirds (32.8%) of the perinatal deaths had a medical certificate of death.

Conclusion

The study could ascertain a cause to over 70% of the perinatal deaths, which did not have a medical certificate of deaths. Moreover, the verbal autopsy tool which can be used by health workers could provide vital demographic data which has been found to be missing as most of the still births and more than half of first week deaths are not being registered. Since about two-thirds of the deaths are taking place at home, verbal autopsy can be of substantial help in assessing the underlying cause of death.

Key Words: Vital registration, perinatal deaths, verbal autopsy, medical certificate, urban slum.

Source of support: Indian Council of Medical Research, (IRIS ID 2011-11380)

A Study On Change Pattern Of Ambulance Diversion In A Tertiary Care Teaching Hospital

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Background

In periods of overcrowding, an Emergency Department can request the Emergency Medical Services (EMS) agency to divert incoming ambulances to neighboring hospitals, a phenomenon known as "ambulance diversion".1, 2 Ambulance diversions pose a health risk to anyone who needs immediate medical attention.3, 4 Furthermore, ambulance diversions are an indication that individuals are using Emergency services for their primary care, and that hospitals have inadequate bed capacities, and/or are being poorly managed. The present study focuses on change pattern in ambulance diversion after upgradation and improvement of EMD services in Nizam's Institute of Medical Sciences (NIMS), a renowned tertiary care teaching hospital in Hyderabad, India.

Methodology

A retrospect study design with data regarding diverted cases from emergency department, collected from

medical registers maintained at Emergency Department of NIMS, with a time frame of 5 month earlier (February 2012 to June 2012) and 5 months later (August 2012 to December 2012) to shifting of emergency department. Data was initially presented using descriptive statistics, hypothesized and analyzed using paired t-test to find the statistical significance of change pattern with p-value as 0.05.

Results

The results revealed that there is 65% reduction in ambulance diversion after shifting EMD. The most common cause for ambulance diversion was non-availability of services and non-availability of ventilators before and after shifting EMD respectively. Statistical analysis showed that there is significant decrease in total number of diverted cases. It was also observed that there is significant decrease in cases, which were diverted since there was non-availability of services earlier after providing few services, which were not available earlier. It can be noted that there is no significant decrease in cases, which were diverted for the reasons of non-availability of beds or ventilators.

Conclusion

Effective management can bring changes and solve the problem of Ambulance Diversion and present study stands as a good example of one such intervention, which decreases Ambulance diversion over long term periods.

Key Words: Emergency services, Ambulance, Diversion

Organisation Of Prehospital Trauma Care System At National Level

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Background

Trauma is one of the leading causes of premature death and disability globally. The prevailing strategies for trauma control focus on primary prevention i.e. avoiding occurrence of mishaps or secondary prevention, providing adequate medical response to minimise disability following injury. In majority of instances prompt prehospital trauma care and subsequent safe evacuation of injured to the fixed facilities govern the outcome. To be effective and efficient, the prehospital trauma health care system should be simple, sustainable, practical and flexible and should be integrated with the country's existing health care and transportation setup. In 2000, international experts at a special meeting convened by the World Health Organization (WHO) in Geneva stressed upon the need to strengthen the quality and availability of systems of prehospital trauma care throughout the world. In India, certain states like Delhi, Gujarat, Maharashtra, Andhra Pradesh and Karnataka have established prehospital trauma care system, which are in a state of evolution. There is a need to develop and strengthen the framework of prehospital trauma care in the country based on established guidelines and experiences of other countries.

Methods

Personal experience during various Natural calamities like Super cyclone at Odisha (1999), Earthquake at Bhuj (2001) and Tsunami (2004) coupled with a comprehensive review of literature incorporating electronic search engines and reputed journals and books on the subject.

Results

To institute efficient Pan India prehospital trauma care system, the country needs to frame and implement comprehensive guidelines and infrastructure in place. The paper discusses the strategies and measures to evolve a comprehensive prehospital trauma care system.

Conclusion Institution of well-organized prehospital trauma care system supported with simple, swift and cost effective strategies and policies will reap enormous financial and social benefits in terms of reduction in early preventable deaths and limitation of injuries. These benefits will immensely contribute towards country's socio-economic development.

Key Words: Fixed facilities, Organisational structure, selected bystanders, community volunteers, basic and advanced pre-hospital trauma care.

Wireless MEMS Glove for Measuring Hand Tremor

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The paper describes the development of the MEMS (Micro Electro Mechanical System) accelerometer based wireless glove system for sensing and recording the hand tremor with minimum discomfort to the subject, by simply wearing the glove to the subject. This design wireless MEMS Glove shown in Figure 1 consist of a single axial MEMS sensor with its read-out embedded design using programmable system on chip (PSoC) has been designed and fabricated to monitor and measure the severity of various movement disorders such as Tremor, Bradykinesia (slow and irregular movements), gait disorders and Dystonia (twisting movements and sustained postures). Virtual instrument program developed with graphical language, LabVIEW, shown in Figure 2 acquires on-line data from wireless MEMS glove and provide menu driven on-line tremor data along with the parameters like amplitude, count of the tremor above the threshold level and frequency of the vibration signal. Also has the facility to store the data in a user specified file path. The designed glove is working successfully and is ready for clinical test and analysis.

Figure 1: Wireless MEMS Glove for Hand Tremor Sensing

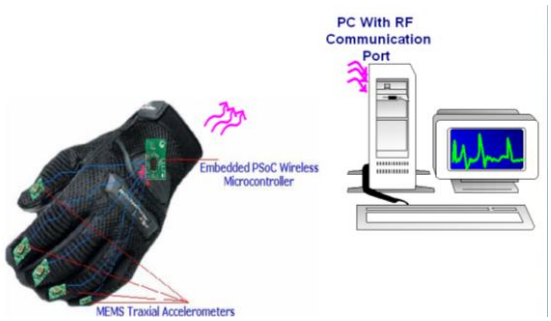
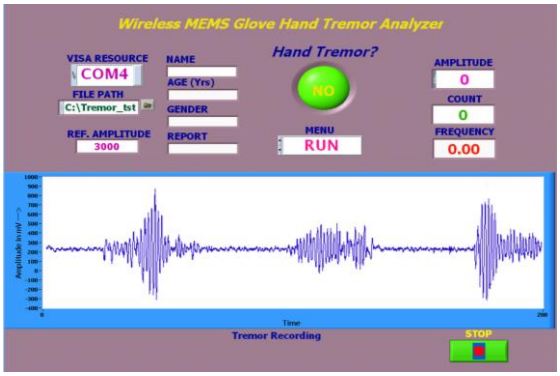


Fig.2:

Figure 2: Virtual instrument GUI screen of the Wireless MEMS Hand Tremor System



Key Words: MEMS Accelerometer, Tremor, Virtual Instrument, Programmable System on Chip (PSoC).

Measuring efficiency of emergency processes using value stream maps at Sick Newborn Care unit, Vaishali

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Background

Sick newborn care units have been established at District Hospitals across country to provide level 2 Newborn intensive care. SNCU, Vaishali is the first such facility in state of Bihar. Though facility has state of art infrastructure and equipment the outcome of care is sub optimal with high Mortality rate (Mean- 20%, SD 7.02) and low discharge rate (Mean 53%, SD 10.9). As 51% of the newborns are admitted with indication of birth asphyxia it is critical to have prompt triaging and initiation of treatment. In this context we looked into the emergency care process using lean process improvement tools.

Aim

To measure the process efficiency and quantify non-value adding activities in triaging and emergency care processes using value stream mapping.

Methodology

A process-mapping tool was developed based on initial observations of the critical processes and consulting the existing tool practiced in other settings. Critical processes e.g. receiving, triaging, initial assessment and admission and administration of first order were measured and recorded on this tool for consecutive 30 patients arrived at SNCU. For every processes Cycle time and touch time (time actually spent on value adding activities) was measured using 1/100 second stopwatch and wastages in each steps were enumerated and categorized into seven lean Mudas (Source of Waste) i.e. Confusion, Motion, waiting, over processing, inventory, defects and over production. Data was complied into activity tables and analysed using Minitab 14 and Quality Companion. Findings were presented in form of Value Stream Maps.

Results

It takes on an average 35.6 (95% CI- 20.5, 65) Minutes to complete one cycle from receiving of the patient to administer the first order. Out of this average 41% (95% CI -7, 34.6 minutes) time is wasted in non-value adding activities amounting touch time of only 20 Minutes (95% CI- 13.5, 31.2).Most of the time wasted due to redundant administrative processes like complex documentation (Mean 2.9, 95% CI-2.4, 3.3), and excessive walking for hand washing (Mean 2.4, 95% CI- 2.2, 3.5), Waiting for drugs and doctor (Mean 4.5, 95% CI 3.2, 8.5), duplication work like weighing newborn twice (Mean 1.5, 95% CI 1.1, 2.2). Most prominent waste was waiting (30%). Other wastes e.g. Confusion (9%) Motion (16%), over processing (10%) inventory (12%), defects 3% and over production (20% were also observed in the processes.

Conclusion

It can be inferred that redundant administrative processes like documentation and inadequate information and inventory is leading to delay in emergency care which can be attributed to the sub optimal clinical out come of the facility. Value stream mapping is an excellent tool for mapping health care process especially in critical setups like emergency and intensive care.

Key Words: SNCU, Emergency Care, Lean Health Care, Value Stream Maps, Process Mapping

International Statistical Classification of Diseases (ICD-10) and role of CBHI in its promotion in India

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ICD-10 is the International Standard Classification of Diseases for morbidity and mortality coding (10th revision).It came into use in WHO Member States from 1994 while its endorsement by Govt. of India was done in 2000. In addition to enabling the storage and retrieval of diagnostic information for clinical, epidemiological and research purposes, ICD-10 also provides the basis for the compilation of national mortality and morbidity statistics thus helping in better analysis of the health situation of population groups within a country and among different countries. ICD-10 codes are alphanumeric and represent a particular disease condition, for example the ICD-10 code for Insulin Dependent Diabetes Mellitus is E10.

CBHI (Central Bureau of Health Intelligence) is the National Nodal Institution for health intelligence in India and also WHO Collaborating Centre for Family of International Classifications for promotion and use of ICD-10 in India. Its mandate includes training of various levels

of health personnel on Health Information Management and Hospital Records Management in addition to training on ICD – 10, thereby facilitating in Health System Development of the country.

Role of CBHI in promoting use of ICD-10

1. Several Workshops & Case Studies on ICD-10 usage conducted since 2004.

2. Identification of Target Groups and group specific actions:

- Inclusion of ICD-10 in curricula of professional degree courses (i.e., MBBS, MD and paramedical).

- In-service personnel of health sector to ensure use of ICD-10 for coding, computerisation of MRDs, orientation on ICD-10 for staff, data forms to incorporate ICD-10 codes.

3. Simplified Training Module & Workbook on ICD-10 developed.

4. Creating a pool of medical & paramedical manpower trained on ICD-10 in the country. Trainings on ICD-10 conducted through nine Training Centres distributed all over India. Five day trainings is provided to medical personnel/ health officials and Master trainers. Half Day Sensitization Workshops conducted to sensitise medical / paramedical personnel in Medical Colleges / Large Hospitals in govt. and private sectors. Besides, International participants from Bhutan, Maldives & Myanmar have also been trained during two weeks' WHO- Fellowship on ICD-10.

Conclusion

Through its sustained efforts, CBHI has been able to initiate and implement the activities towards promoting use of ICD-10 in India for morbidity and mortality coding. This would lead to further strengthening of Health Information System in the country.

Key Words: CBHI, Coding, ICD-10, WHO.

A Model For Rural Health Services From Concept To Design: An Experimental Approach

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Delegates attending this year's 10th Health Executives' Training camp at Srinagar were tasked to develop a model of health care appropriately suited for a geographic population in a rural setting in India. This paper documents the theoretical journey undertaken by the author in developing a concept through a discursive approach and taking this to its logical end. The final development of two opposing models of service delivery through interactive discussions both within and outside the group of 65 delegates is presented. The first model is based upon a century-old traditional public health concept of preventing disease and its gradual evolution into a primary care-led service. The reality of its abject failure in reducing infant mortality, improving women's health and many other WHO criteria calls into question the logic of continuing to indiscriminately invest further valuable resources without questioning the implementation of such a model. Conversely, it has been argued in various circles that given the backdrop of a rapidly changing socio-economic climate currently prevailing in India and the potential availability of modern technology, there is potential tor consider an alternative model that harnesses these new resources both for funding and application to improve services in different forms. A discursive for successfully applying an ethically acceptable version of this 'Devi Shetty' model is presented, including the necessary governmental regulations needed to ensure equity of local delivery and universal accessibility for a family-centred service. The scope for providing the traditional model for delivery but utilising remote methods for assessment and advice of patients using mobile connectivity (tele-healthcare), the funding of healthcare services through Corporate Social Responsibility schemes and the application of modern principles of infection control in environmentally-friendly surroundings could be the route chosen for some populations upto 2-5 million for instance in localized areas of Kashmir. However, the development of a radically different model using a ring of tertiary care and specialist hospitals for delivering a high quality of care for the service in a selected population for example in well-resourced and selected demographies in Gujarat could have its place. Importantly, it is argued that in this day of evidence-based medicine and in the age of clinical trials it should be possible to carefully design an experimental trial to validate clinical measures for patient-related outcomes and relevant indicators for the quality of patient experience in order to properly evaluate service delivery by the two models. Ideas for be documenting the prevailing attitudes to personal health and the differing priorities of various stakeholders about their priorities for the health care needs can done by audio-visual means. Further, it is concluded that the media is a powerful tool in getting the views of the individual patients heard and in enabling the community leaders to hold those providing the services to account. Critically, the patient need not rely on expensive formal legal processes or the failing state governance systems alone to provide succour or relief from damages in the modern world of rapid social networking.

Key Words: Theoretical models of Health care – Kashmir and Gujarat

An Evaluation of Services Provided at Emergency Treatment Units of Southern Province – Sri Lanka

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Introduction & Background

Emergency and trauma care is the medical care provided to a victim who required timely diagnosis and treatment of actual and potential injuries by a multidisciplinary team of health care professionals. In Sri Lanka, injuries have been the leading cause of hospitalization and medical emergencies were the leading cause of death since 1995. Emergency Treatment Unit is a place with medical and surgical emergencies established to provide quick and quality service to the patients. Emergency treatment unit plays a key role in patients' management in Sri Lankan hospital. Though each unit provides similar services different assessment system and management plans are practiced in different hospitals in Southern province of Sri Lanka. The study was conducted with the objective to improve emergency care through the improved application of current knowledge and to provide practical tools to help emergency care clinicians. The study variable includes demographic data in view of identifying the affected population in 3 main emergency treatment units in Southern province, morbidity pattern of patients admitted to the ETU and the outcome of patients and the service deficiency factors. A descriptive study was carried out for period of one month in three major health care institutions in Southern province. All the admissions done during that period was included in the study and data collection was done by 3 trained Pre Intern Medical Officers using the questionnaire and analysis was done using software.

Sample size was 1556 from all 3 institutions. Most of the patients admitted were >60 years (41%). Gender wise male and female patient was equally admitted with mild male predominance. (48% and 52%). Maximum number of patients arrived during the day time was (8.00 a.m. – 12.00 noon) (28%). Average time they spent at ETU was 2 hr. – 3 hr. (72%). Major reason for admission was chest pain (49%) and 94% were admitted for medical reasons. 77% cases admitted were needed further referrals to other units. Majority of the blood investigations (42%) and ECG (81%) were ordered within 30 mm and reports were available within 30 min. but there were service delays in getting x-ray, US scan and CT scans done. Diagnosis of the patient at discharge majority were IHD (28%) followed by respiratory illnesses (11%) and muscle pain (6%). 52% patients admitted were in need of further referral. Majority of patients (82%) were discharged without disability. But 5% of patients survived with affected daily activities and only 3% died following admission.

Conclusions

In conclusion medical emergencies were the commonest among all emergency cases attended patient attendance was maximum during the daytime. There were shortcomings in service provisions due to lack of skillful medical staff, lack of proper supportive service and lack of proper referral system. Therefore, resource allocation should be done according to the above problem. Protocol development and enhancement of communication is needed. In addition, administration and IT support for data collection and collations should be addressed in all 3 institutions.

Competency Assessment of Nursing Officers in Emergency Care

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Currently approximately 35% of hospital admissions are classified as emergencies. Emergency care is delivered in an inherently challenging environment, often requiring providers to make quick life and death decisions based on minimal information. Nursing practitioners have been practicing in emergency care for nearly 5 decades until now competences were not established to verify nursing practicing ability to perform in the emergency setting. Intervention study was carried out with an objective to assess the level of nursing competences in emergency care settings. Selected nurses were from main health care institution in Galle and Matara district were given 3 day residential programme with a follow up booster held 3 months later. Major topics explored throughout were importance of emergency care, responsibility, preparedness, Advance Life Support, Basic Life Support, emergency assessment, ECG interpretation, unconscious patient management and skills on assessment of patient and medical emergency management scenario. Training was concluded at Emergency & Trauma Care Centre at Teaching Hospital – Karapitiya. Evaluation was carried out in 3 components. Knowledge was assessed by a standard questionnaire immediately before and after intervention implementation as well as 3 months later. Similarly skills were assessed using a nursing skill – peer assessment format. Additionally focus group discussions were conducted in order to assess the attitude and behavior related to emergency care practices using 6 key questions. Study sample consisted of 56 Nursing Officers. Outcome of the study was interpreted in 3 components. Results revealed that there is an improvement of knowledge related to emergency care by 54% as assessed by the post-test (34% pre-test, 88% post-test) and 3 months later it remained at 76%. In the assessment of skills it was assessed according to the four levels. Most (73%) of the nurses were at level 3 prior to the training and after training – majority (66%) were assessed as level 2. 16 participants were included in the focus group discussions and their attitudes and behaviors regarding emergency care practices were good. Assessments of competency of practicing nurses are critically important in maintaining professional standards and identify areas for professional development and educational needs.

Systems-Based Practice: The Sixth Core Competency

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In India, the healthcare delivery system starts up from the sub-center at the village level and reaches up to super specialty medical centers providing state of the art emergency medical services (EMS). These highest centers, located in big cities, are considered the last referral points for the patients from nearby cities and states. As the incidents of rail and road accidents have increased in recent years, the role of EMS becomes critical in saving precious lives. But when the facilities and management of these emergency centers succumbs before the patient, then the question arises regarding the adequate availability and quality of EMS.. The emergency services infrastructure seems inadequate and quality and timely provision of EMS to critical patients appears unsatisfactory. This report is intended to provide background to assist in advancing the development of a performance improvement strategy for patient satisfaction in Emergency Departments. Prolonged boarding times (increased wait times for admitted patients) in the emergency department result in an increase in morbidity and mortality in critically ill adult patients admitted to the ICU. Overcrowding in the emergency department (ED), medication errors, and a delay in transfer to the ICU are the leading reasons for an increase in morbidity and mortality. This paper focuses on a comprehensive assessment determine if the issues cited in the literature of:

1. Overcrowding
2. Medication errors
3. Delays based on the assessment data and evidence-based plan will be developed.

The target is to provide practical advice to clinicians and managers on how to use health care data to improve the quality and safety of health care in a systematic way:

1. Developing the knowledge and skills for understanding human performance, the systems of care and for minimising and dealing with error.
2. The application of methods to identify, measure and analyse problems with care delivery.
3. Action upon that information to improve both the individual and the systemic aspects of care delivery.

Quality of care includes three aspects:

1. Clinical outcomes
2. Service delivery
3. Cost effectiveness

Measuring quality in Emergency Medical Services (EMSs) systems is challenging. This paper reviews the current approaches to measuring quality in health care and EMS with a focus on currently used clinical performance indicators in EMS systems (US and international systems). The different types of performance indicators, the advantages and limitations of each type, and the evidence-based prehospital clinical bundles are discussed. This paper aims at introducing emergency physicians and health care providers to quality initiatives in EMS and serves as a reference for tools that EMS medical directors can use to launch new or modify existing quality control programs in their systems.

Background

Measuring quality in emergency medical services (EMSs) is important since EMS is the practice of medicine in the hospital setting. At its earliest developmental stage, an EMS system is a system of emergency care that functions to reduce death and disability usually resulting from two epidemics: trauma and cardiac arrest. In the United States, EMS systems have witnessed a major transformation since the EMS program was first established in 1966 in the Department of Transportation through the Highway Safety Act. The expansion in EMS scope and increase in the range of medical interventions performed by hospital providers were paralleled with an increased scrutiny of the value and effectiveness of the services deployed in the hospital setting .The need for increased coordination in patient care and higher quality care at lower costs has made it essential to have in-place quality control or quality improvement programs that rely on key performance indicators to continuously monitor the system's overall performance and the effectiveness of the different hospital interventions.

Use of Titanium barcode bracelets by general public to help emergency service personnel to serve better in times of mass disaster

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Recognition of charred bodies in mass disasters is a difficult task. Similarly it is difficult to decrease the casualty rate in mass disasters due to the unavailability of medical records of victims which can help the emergency personnel get a better idea about the health related ailments of the victims. Death due to drug allergies during emergency situations can happen in individuals who are in frail health to start with. Medical alert identification bracelets exist currently to help the emergency personnel in identifying the type of drugs to which the person is allergic to. Under ideal conditions these bracelets may function well, but not in case of mass disasters which involve high temperatures, like a plane crash or industrial accidents involving fire. In order to achieve a moderate degree of protection to the bracelet, thereby protecting the wearer himself, it is imperative to use a material, which is resistant to high temperatures. A cobalt chromium bracelet with a barcode made of titanium could be ideal solution for such situations. Cobalt chromium alloys have high melting points. This coupled with titanium will make the bracelet virtually indestructible under most conditions prevailing in mass

disasters. Barcode, if made of titanium shall provide the details of the victim when fed into the central directory of health records of the company providing that particular service. Unlike the limited services being provided right now by some companies for medical alert bracelet customers, a broad range of services can be incorporated into the barcode including the wearers name, address, updated health records, phone numbers of close relatives etc., to not only help the emergency services but also the police personnel in case of a crime.

Key Words: Emergency, titanium, medical, bracelet, causalty

Bridging the Research/Practice Gap in Healthcare Management – Examples from the Center for Health Systems Innovation and the Center for Evidence Based Management

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Both in medicine and in management a research/practice gap continues to exist. Evidence-based practice (EBP) is a knowledge management technique that has been developed by scientific researchers and practitioners to bridge the research/practice gap. EBP has profoundly changed the way practitioners in many fields shape their decision making process. EBP's most well known implementation has taken place in medicine (Evidence Based Medicine, or EBM). Variations of EBP have been developed for education, public policy, nursing, marketing and many other fields, including management (Evidence-based Management, or EBMgmt). In this presentation we show three examples of ways to bridge that research/practice gap in healthcare management. Oklahoma State University's Spears School of Business has developed an Executive PhD program in Business for professionals, which focuses on Evidence Based leadership and innovation driven organisations. One of us is enrolled in this program. As a PhD research project, we developed and scientifically validated the Evidence-Based Management Attitude Scale (EBMAS). EBMAS is a short questionnaire that has been developed to be able to measure managers' attitudes toward evidence-based practice. The scale consists of fifteen questions and four subscales (intuitive appeal, openness to change, organizational requirements, perceived divergence). The scale has adequate internal consistency for the four sub scales and the scale as a whole with Cronbach's Alphas in the 0.689-0.888 range. Bosman & Rombout 3/3. Two teaching hospitals in Amsterdam, the Netherlands asked the Center for Evidence Based Management (CEBMa) to write a report about the available evidence to the 'effectiveness of the 360 degree feedback tool among the medical specialists and healthcare professionals in their hospital'. The 360 degree feedback tool is defined as "evaluations gathered about a target participant from two or more rating sources, including self, supervisor, peers, direct reports, internal customers, external customers, and vendors or suppliers". We report about the systematic review performed to answer this question. The Center for Health Systems Information is currently developing a questionnaire to measure innovativeness, proactiveness and risk taking propensity of healthcare organisations. We report on the current state of the development of this tool. Together, these three examples show that it is possible to bridge the research/practice gap in healthcare management. Bob Sutton, Stanford University professor and Evidence-Based Management expert, claims that current management practice consists of a combination of "hard facts, dangerous half truths and total nonsense". It is essential for healthcare leaders to differentiate between these three categories when they make their day-to-day leadership decisions, and the three examples mentioned may help them make these decisions safely and effectively.

Key Words: Evidence-based Management, 360 Degree Feedback for Physicians, Innovation, Attitudes, Change Management

A study to develop a "Focused Performance Monitoring Protocol" and subsequent evaluation of Performance of Nursing Services in the identified Nursing Unit of a Tertiary Healthcare Teaching Institute of Lucknow, Uttar Pradesh

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Introduction

Nursing care can significantly influence the quality of healthcare provided and, ultimately, treatment outcomes and patient satisfaction. It is important to identify the major nursing care areas and formulate a data base in order to quantitatively evaluate performance of nursing services; but a very little research work has been performed in this area, hence it was decided to carry out a study at SGPGIMS hospital.

Aim and Objectives

- To develop a tool for graded performance evaluation of nursing services.
- To identify most important areas of nursing services out of performance evaluation tool so as to develop a Focused Performance Monitoring Protocol (FPMP) for Nursing Services.
- To ascertain the degree of compliance by an identified Nursing Unit to the parameters mentioned in FPMP so as to prepare a report on compliance rate.

A close-ended auestionnaire including 39 areas of nursing services was given to 339 doctors and nursing supervisors of the various medical and surgical specialities with response rate of 69.61%; similarly a Close Ended Interview Schedule including 14 areas of Nursing Services, which patient can assess was administered to 286 (50%) in-patients of the Indoor Units of same specialities selected by Quota Sampling. Respondents were asked to rate each area for its importance in the determination of performance. The top areas on the Rank Lists prepared on

the basis of their responses were expanded into Minimum Data Sets, constructing FPMP, which was pilot tested for its applicability, comprehensiveness and reliability in ascertaining degree of compliance to each parameter.

Pilot Testing FPMP, founded Gap in the performance of the nursing services with Average Compliance Rate of the unit came to 65.67%. Areas of nursing services "The Hygiene and Cleanliness of the ward is maintained" observed compliance of 100% followed by "Need for supply of oxygen is attended" with 94% compliance. Important area of nursing service "The Patient is protected from Infection" had compliance of merely 11.42%, as most of the datasets under this area had no compliance. No proper disposal of Bio-Medical Waste shows either lack of Sensitization or no Proper material required for disposal of Bio-Medical Waste. Area "Unit is prepared for emergency situation" had 50% compliance as Emergency Trolley of unit was Equipped with necessary equipment and medicines but none of Nursing Personnel were BCLS certified. "Need for Nutrition and Fluid Balance" had compliance for 63.33% as Input – Output and Temperature chart was not maintained. Similarly "Current condition of the patient is assessed" had 75.29% compliance as Temperature Chart was not being maintained.

The researchers have proposed the most significant areas of Nursing Services. The FPMP would be useful for administrative officials as a first step to evaluate the performance of nursing services in hospitals. Although the compliance was relatively lower than expectations, resulting in poor nursing services. Differences between expectations and performance for both patients and nurses need to be further reduced.

A Review: Legal & Ethical Issues in Emergency Medical Services

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Emergency medical care services in India exist at all levels of the state-owned medical system and in private hospitals. The medical staff infrastructure consists of combination of junior and senior residents, specialists and paramedics to manage patients of all age groups in need of acute and urgent management of their illness and injuries. With the current rise in crime incidences affecting people all age groups and strata of life, emergency care providers have to deal with a wide spectrum of medico-legal cases involving physical, mental and sexual assaults. Medical centres lack adequate resources for handling such cases and even avoid dealing with them as cited by Supreme Court of India in Parmanand Katara case judgement. The judicial system mandated the delivery of care by every hospital regardless of a patient's paying capacity and medico-legal status in times of emergency. Failure on the part of any hospital to provide timely medical treatment to a person in need of such treatment results in a violation of the patient's "Right to Life," which is guaranteed under Article 21 of the Constitution of India. Laws comparable to EMTALA (Emergency Medical Treatment and Labor Act) and the COBRA (Consolidated Omnibus Budget Reconciliation Act), which are well recognized in the USA, are being formulated in India to provide necessary emergency care services to the patients. The changes in standard and parameters for seeking admission to medical courses, avoidance of qualified doctors to deal with medico-legal cases and court evidences, increasing litigations against doctors, commercialization of health services, doctors being within the purview of the Consumer Protection Act and changing patients' attitude has diminished the fiduciary character of Patient-doctor relationship. There is an urgent need for medico-legal training of the doctors and to reform the policies of hospital care and administration. This paper deals with the critical review of the Supreme Court judgments, existing laws and recent amendments in various legal provisions for emergency medical care in India. It also compares the Code of Ethics, emergency medical services and legal provisions in various countries in the world. Thus this paper would provide a better understanding of the present situation of the medical emergency care and the steps needed to be taken to cover that gap between the practiced and prescribed standard operative procedures of emergency medical care services.

Key Words: Emergency medical services, Code of ethics, judgment, Law, Act.

Development Perspectives of Health Care Financing Policy for Sri Lanka

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Sri Lanka, at present, is practicing a two-tiered system in health service provision. The public financed health system is dominant and it provides free health care services to the entire nation, at the point of delivery. In addition, a rapid expansion of the private sector is also envisaged. In this context, Sri Lanka has achieved exceptional and equitable health outcomes, at low levels of health expenditure through high system efficiency. However, it is questionable whether financial protection and equity are assured by having a widely expanded public health service system in the country, because out of pocket expenditure on health is rapidly increasing. Health care coverage and financial protection are determinants of a well performing health system, which contributes to good health outcomes. Changing of morbidity and demography patterns requires more financial resources for both curative and preventive care services. Consequently, the public health system is struggling with resource scarcity to accommodate continuing care demand, particularly owing to the high prevalence of non-communicable diseases. Resource scarcity in the public health system prevents the preservation of equity and financial protection in the nation. Therefore, the government has started to re-visit the different health financing mechanisms to obtain more health for the money, by aiming to achieve universal coverage and social protection. The broad objective of

this paper is to collate and review the recommendations emerging from national dialogues relevant to the agenda on health care financing in Sri Lanka. Published and unpublished documents of stakeholders' consultations on health care financing were accessed via the Ministry of Health, and reviewed. There were different arguments on the existing health system from a variety of experts. First, different types of earmarked taxes need to be enforced to increase the fiscal space. Accordingly, the expected contribution from the government towards total health expenditure needs to be ascertained through improving technical and allocative efficiency. Next, making the service system efficient should be predominant. To reinforce this, one group of experts suggest that publicly financed health systems are optimal, and that the current public health system should be restructured to be more efficient. Further, the national health care financing strategies consider alternative financing mechanisms to achieve universal coverage, with emphasis on expanding the primary health care system in the country. In addition, further studies on health insurance systems are also required to assess the viability of expanding the Agrahara insurance system in to other sectors in the country. Finally a mixed health financing system was proposed, since it brings a variety of benefits to the economy.

Key Words: Health Care Financing, Financial Protection, Primary Health Care, Equity

Epidemiology of Road traffic accidents in North Delhi, India

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Introduction

As per the report of the Ministry of Home Affairs, Government of India, one accident occurs every two minutes with the accident rate of 45 per 100,000 population. Delhi ranks fifth among other states/Union Territories of India in respect of accidents. The National Capital Delhi is divided into nine zones, which are further sub-divided into wards. The present study deals with epidemiologic investigation of road traffic accident presenting to Sushruta Trauma Centre, New Delhi.

Objectives

- To study the descriptive epidemiology of Road Traffic Accident victims in Sushruta Trauma Centre, New Delhi.
- To predict hot spots for road traffic accidents through GIS mapping.

Methodology

Road traffic accident victims who availed medical or surgical consultation at Sushruta Trauma Centre, Delhi were studied. The information was obtained from the Medical Record Department for both the Out Patient Department and in-patient records and the police stations where the Road Traffic Accident victims were registered.

Result

Of 544 victims, 450 (82.72 %) were males and 94 (17.28%) were females with mean age for male 30.80 and female 31.81 years respectively. Three out of 10 (28.68%) victims were students followed by semiskilled (84; 15.44%) and skilled-laborers (64; 12.50%). At least three fourth (76.10%) victims suffered injury of the limbs followed by head (34.55%). Most of the accidents occurred during weekends {Fridays (18.75%) & Saturdays (16.73%)}. Pedestrians (195, 35.85%) had the highest number of road accidents followed by pillion riders, (121; 22.24 %). T Junction and Mid-Block points were the usual site of accident. Out of 252 accident sites recorded within the 5 Km radius of the trauma center, a cluster of accident spots (46; 18.25%) were observed in Timarpur ward.

Conclusion

Global burden of disease due to road traffic injuries now ranking ninth in order of disease burden is expected to become third in the year 2020. Understanding the epidemiology of road traffic accidents and risk factors is essential to plan possible prevention and control strategies.

Key Words
Road traffic accidents, GIS mapping, high risk group, injury epidemiology, hospital based profile of accidents

Queueing Models for Patient Flow Analysis in an MRI Department

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Patient flow modeling of hospital systems plays a key role in hospital management by providing important insights for improving the operational performance of the system. Due to the characteristics of a hospital system, such as stochastic arrivals, stochastic service times and probabilistic routings within various facilities and resources, the patient flow models are stochastic in nature. Furthermore, due to limited resources, there is queueing at various facilities. Thus the patient flow models may either be in terms of analytical queueing formulations or computer simulation of these queueing systems. Both the methods of analyzing the operational performance of the system have their merits and demerits. While the analytical models are usually a simplification of the real system (for the sake of tractability), simulation modeling requires a lot of data and expertise though being flexible in representing the complexities of the real system. Both the methods should be used in such a way that they complement each other. The performance metrics that are usually computed through such modeling are the usual queueing theory performance metrics, i.e., waiting time of customers, idle time and utilization of servers and congestion measures. This paper deals with modeling and analysis of patient flows using analytic queueing theory models. Patient flows may be represented by single node queueing systems at the simplest subsystem level or a network of queues as a larger system. To have a clear understanding of any hospital system, it is better to first break the system into smaller subsystems, which may be

represented by single node queueing systems and analysed separately. After gaining insights about the performance of the subsystems, the interaction between these subsystems and the performance of the whole system may be analysed and compared with that of the isolated subsystems. The hospital subsystem considered here is the MRI section of the radiology department. We represent the system as a single node queueing system, where the arrival stream of patients consists of both advance scheduled and same day (i.e., open access) customers. This means that both scheduled and random arrivals have been considered. Multiple classes of patients are considered, the classification being on the basis of type of investigation, source of arrival (i.e., outpatient, inpatient and emergency department) and whether the patients are advance scheduled or same day patients. For illustration, we consider a real life MRI section of the Radiology department of a multi-speciality hospital situated in easternIndia. To parameterize the queueing models, data on arrival patterns and service times have been collected from the hospital information system and log books at the department of radiology. Some managerial implications and future research directions are also discussed.

Key Words: Patient flow, Stochastic modeling, Queueing theory

Health Implications of Drought and Feasible Preparedness and Mitigation Measures

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Over 68% of India is prone to drought of varying severity. 'Drought' is a hydro-meteorological disaster which indicates scarcity of water and moisture-stress caused by below normal rainfall, resulting in low agriculture and livestock productivity affecting livelihoods and human health badly. Drought is a complex and least understood disaster, the impacts of which often depend upon the nature of socio-environmental background in the region, and affects more people spatially than any other disaster. India receives 73% of rainfall during monsoon (June to September) and due to its failure, the rain-fed agriculture is impacted badly recording low food grain yields. Drought and malnutrition are intricately related as evident from past famines caused by drought. In later part of 19th century, about 25 famines killed 30-40 million people, which is an indicator of drought causing malnutrition leading to morbidity and mortality. Unsuitability of water resources in terms of feasibility or water quality, water losses due to evaporation, overexploitation and wastage, contamination by over use of water for non-agricultural purposes are some of the attributes aggravating multiple socio-economic problems and health hazards. Drought has multiple adverse health effects ranging from malnutrition, water borne diseases, air-borne diseases, vector borne diseases and even mental illness provoking suicides. There is no doubt that drought has multiple adverse indirect health outcomes too. The severity of impact varies according to underlying vulnerability of the population from death at one extreme to minimal or no effect where the population/individuals have financial and other resources to buffer themselves from any potential effects of impending health hazards. Essentials to drought preparedness and mitigation in reducing the effects of drought on human health, are early warnings and drought monitoring systems to timely warn people of potential threats to health, to create a historical record to assess changing conditions and disease profile, risk identification of vulnerable population groups, regions, and sectors most at risk during drought. Scientists believe that adaptation strategies need to strengthen health sector preparedness for drought, including heat-health action plans, emergency medical services, improved climate-sensitive disease surveillance, improved health service delivery, provide safe drinking water with improved sanitation and good hygiene conditions to check epidemic outbreaks.

The paper seeks to identify major health hazards posed by food insecurity caused by drought and outline possible preparedness and mitigation measures to reduce debilitating impacts of drought conditions on human health.

Key Words: Drought, Hydro-meteorological Disaster, Normal Rainfall, Health hazards Malnutrition, Preparedness and Mitigation

Real Time Non-Invasive Cardiac Health Monitoring System

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The project aims at making a portable device to measure pulse rate, Blood pressure, Cardiac output, respiration rate, oxygen saturation and heart rate variability in a single device , non-invasively from Photoplethysmography (PPG) signal and Electrocardiogram (ECG) signal. According to government of India figures, 70% of patients in the country are village-based whereas, 75% of Doctors are placed in urban areas. The doctor-patient ratio was a sparse 1:1722 in 2005. That figure is fairly small to handle a country with progressive cardiac patients estimated to 4.58 million by 2015. Study reveals that by 2020 60% of cardiac patients are in India. Moreover existing devices present in the market make use of cuff pressure and tonometer methods for measurement of BP; these cannot be used for continuous/real time monitoring. Devices employed in hospitals for measuring Cardiac Output are invasive, bulky, nonportable monitors and use expensive disposable flow sensors for each patient and do not come in a single integrated unit . A device to measure pulse rate, Blood pressure, Cardiac output, respiration rate, oxygen saturation and heart rate variability non-invasively is not available at present in miniaturized forms. This has inspired us to come up with this type of system where, both ECG and PPG signals are obtained using analog processing circuits. Data Acquisition Systems are used to

send the data to a microprocessor where the waveforms are analyzed. Using signal processing techniques, the mentioned parameters are calculated and displayed. The pulse rate is calculated by using peak detection algorithm by using the PPG Signal. The average time interval between successive peaks gives the pulse rate. PPG signal has AC and DC components of which the latter is analyzed to calculate Respiration Rate using VFCDM technique. BP has inverse relationship to Pulse Transit Time (PTT). PTT is calculated as the time difference between the R-peak of ECG signal and the peak of the PPG signal. Blood Pressure is measured by correlation with PTT. SpO2 is calculated by computing the AC and DC components of both the red and infrared LEDs corresponding PPG signals. The PPG signal is analyzed to obtain an index called inflection and harmonic area ratio (IHAR), which has a correlation with Cardiac output. The device would be easy to setup and determining these parameters would be instantaneous (5- 10 seconds), which is of great help in case medical emergencies and ambulatory services.

Key Words: Photoplethysmography (PPG), Electrocardiograghy (ECG), Pulse Transit Time(PTT), Variable Frequency Complex Demodulation (VFCDM), Cardiac Output(CO)

Family Friendly Hospital Initiative: A Stepping Stone Towards Continuous Quality Improvement

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The paper presents a unique 'Family Friendly Hospital Initiative' (FFHI) that works towards provision of comprehensive patient care in a safe environment in public health institutions, by focusing on resource inputs, process inputs and monitoring outcomes. This was initiated under the aegis of Government of Bihar (GoB) through a DFID funded project, in collaboration with Bihar Technical and Assistance Support Team (BTAST), wherein IPE global is one of the implementation consortium partners. The Family Friendly Hospital is envisaged to create an enabling environment in public health facilities, where service providers offer quality care and ensure patient safety by adhering to evidence based protocols. The hospital environment is made conducive for the facility's beneficiaries to enjoy comfortable institutional stay, particularly for women and new borne. Thus, an FFHI focuses on five strategic areas- Patient Care, Patient Safety, Patient Stay, Patient Feedback and Service Providers' Capacity. FFHI is a quality assurance initiative, which ensures provision of a minimum quality essential hospital services package through a series of participatory processes, where the entire hospital staff shares responsibility for improving the service provision in the facility, and progressively moves ahead in improving quality through a system of internal and external audits, certifications and accreditation. It is implemented in three phases: Commencing with Preparatory Phase which entails assessment of the facility, a visioning exercise and participatory preparation of a problem bank, followed by Intervention Phase wherein intensive action is undertaken towards the agreed solution paths considering seven FFHI mandated standards, under the overall guidance of a nominated lead. This is followed by Certification Phase that aims at accrediting the facility to be 'family friendly' based on an internal assessment using a checklist. Beyond these the hospitals move into the phase of Continuous Quality Improvement (CQI). The FFHI certification is a pre-step to prepare the facility for higher levels of national and international certification and accreditation like NABH. The FFHI is supported by district and state level quality assurance to provide supportive supervision, developed by BTAST within the directorate of Health GoB. Early results of implementation of FFHI in 82 facilities in Bihar have shown significant improvement in quality of health services, in turn, generating greater demand in these FFHI facilities and certification of 28 facilities will be achieved by August 2013. Each hospital has a FFHI consultant to provide handholding and supportive supervision support to monitor quality of service delivered. Four FFHI centres have achieved ISO 9001:2008 certification and two are moving ahead for NABH accreditation. In one such hospital in Banka district, the number of inpatients went up by 152% and number of patients availing ambulance services went up by 144%. The FFHI initiative with its people centric perspective in bringing about changes from within the system is commendable and has proved to be a stepping stone in establishing quality health management system. The State is now encouraged for further scaling up the programme in 178 facilities.

Gram Varta: A Valuable Tool for Community Mobilisation

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The paper presents an innovative demand side intervention of Gram Varta (GV) or 'village dialogue', which is a social auditing system, rolled out with dual objective of: Enhanced Community Ownership, and Community Mobilization to increase uptake of quality services in public delivery system and lead to better health outcomes for the community. With the objective to ensure equity and increase accessibility, affordability and quality of services in areas of health, nutrition, water and sanitation, DFID has funded a 'Sector Wide Approach to Strengthening Health' (SWASTH) supported by a consortium partnership, wherein IPE Global as a partner provides Bihar Technical Assistance and Support Team(BTAST). The SWASTH program is an integrated program involving all three departments of Health, Social Welfare, and Public Health and Engineering under Government of Bihar(GoB), thereby addressing both demand and supply interventions to impact health specific and sensitive issues. One such demand side low cost, sustainable and integrated intervention is Community based GRAM VARTA initiative of BTAST under the aegis of GoB, which involves various Self Help

Groups(SHGs) within the State, to improve uptake of health, nutrition and sanitation services, particularly among households, women and infants. This helps women to negotiate new practices with family members, share information among their family and peer networks, and foster community support for action. In doing so, the community mobilisation approach promotes healthier family practices, raises demand for primary HNWASH services, and stimulates local action for change. GV approaches and sustains community level dialogue on health and nutrition specific and sensitive issues to improve health outcomes, and enables the state to achieve MDG objectives. It works through a systematic process of community mobilization involving SHGs using Participatory Learning and Action(PLA) approach, wherein the communities come together to identify their problems, find solutions, adopt appropriate actions and finally review the same. Its members act as Change Agents, first to overcome these problems within their families and then in the communities around them. The technical content of the dialogues are delivered during fortnightly meetings of SHGs using various innovative tools, alongwith participation of community members and frontline workers from different government departments. SHG members are trained to act as Facilitators to ensure sustainability and make the intervention community-owned. SHG members complement the role of Frontline workers by promoting a structured BCC approach for VHSND and home visits, to encourage greater participation and reinforce key behavioral discussions. The pilot of GV in Maner block in Patna district has been successfully executed, mobilizing 103 SHGs with all 20 meetings completed. Early evidence proves GV to be an effective tool to leverage on 'social capital', thereby increasing uptake of services and change in behavior particularly towards immunization, adolescent health, Medical attention during pregnancy, early breastfeeding, and safe drinking water. Owing to successful and increased interaction between SHG facilitators and end users of healthcare facilities, the GV Plus has been scaled up in 22 high-burden blocks mobilizing 13440 SHGs in the first phase. Community based Approaches such as Gram Varta, henceforth, have proved to be low-cost sustainable mechanisms, ensuring better uptake of services in true sense of the phrase: 'Of the People, By the People, For the people'. Supportive supervision by service delivery agents, community mobilisers and facilitators such as Women SHGs empowers the community to ensure demand for quality service through social audits.

Comparison of Genomic Instability in Males and Females Residing in the Vicinity of a Mobile Phone Base Station

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The increased wireless subscriber base in India has led to installation of large number of mobile phone base stations to meet the requirement of adequate communication technology. Besides the advantage of these widespread distributed networks, substantial health concerns from exposure to radiofrequency radiations emitted by mobile phones and their base stations have been raised. Therefore, after clearance by the Institutional Ethics Committee a comparative study on genetic damage between genders was carried out in some residents living in the vicinity of one mobile phone base station in Amritsar.DNA damage, cell proliferation and cell death markers were assessed using the buccal micronucleus cytome assay and compared between males (n=25;37.16±4.04y) and females (n=25; 44.12±2.80y) residing within 300m from the base station for ≥5y with no other occupational/incidental exposure. The statistical analysis revealed a highly significant (p=0.000) elevated frequency of micronucleated cells (0.11±0.06‰ vs 0.007±0.00‰), nuclear buds (0.03±0.00‰ vs 0.004±0.00‰), basal cells (51.69±1.99‰ vs 6.16±0.12‰), karyorhectic cells (13.17±0.86‰ vs 0.71±0.05‰), karyolytic cells (24.55±2.01‰ vs 1.47±0.09‰), pyknotic cells (5.02±1.12‰ vs 0.90±0.04‰) and repair index (293.62±26.03 vs 107.21±37.31) in females in comparison to the male residents. The elevated genetic damage in females may be due to the hormonal changes and dietary pattern. Though there are gender differences, the genetic damage in the individuals residing in the vicinity of mobile phone base station was observed to be significantly higher in comparison to the parallel control group not residing in the vicinity of mobile phone base station.

Role of Ayurveda for Psychosocial and Mental Support in Disaster

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Life means state of being alive, quality manifested by metabolism, growth, reproduction, and adaptation to the state of environment. Biologically, the life of a system begins from the moment of its conception and ends with death. Everyone who faces a natural disaster is psychologically affected by it. India is highly vulnerable to natural disasters, losing about 2 per cent of the GDP on an average due to disasters. The psychological trauma has effects on individual health, family interactions, and stress related risk behaviors. The risk of disaster touches every woman, man and child on Earth." Ban Ki-moon, United Nations Secretary-General in the Foreword of GAR 2009. The ancient science Ayurveda depicts the word Atyay Ati or ksay leads to destruction/ emergency/disaster. (Atyay Dishtantah Pralyo Antyayah, Anto Nashastatha Mrituh.). Moreover, the ancient system of medicine Ayurveda deals with physical, mental, spiritual, social and behavioral stress with its various interventions and techniques. Early support and adaptation processes, which respect local customs in mental health or psychosocial healing, allows an affected population to cope better with a difficult situation with the Ayurvedic approaches on preparedness and rehabilitation for MHPSS. (Swasthasya Swasthya Rakshanam Vyadhitanam Vyadhi-Parimoksha.) Hence, the strength to mental health further provides rapid health, healing and harmony. Information under IEC material would spell out the difference in their survival at the time of natural disasters. The Indian systems of medicine

Ayurveda, is quite close to the natural facts of life and thus helpful for mankind. It is very well possible to prevent the risk factors of stress especially in vulnerable group and promote psychosocial and mental health by various regimens in the form of daily and seasonal diet, deeds, dos and don'ts under the Sadavrita, cognitive approaches, meditational solution, Satvajay therapy, different regimen, Panchkarma and with Medhya Rasayanas, various branches of Ayurveda, the basics and the most important by the drugs. The rules and principles of Ayurveda in collaborative manner under the IASC guidelines for health services for Core mental health and psychosocial support will have right approach in terms of disaster resilience by addressing the emergency preparedness and rehabilitation based on an "All- Hazard/ Whole-Health" concept, as per W.H.O and can be utilized in DRM (Disaster Risk Management). IEC campaign for Disaster Risk Management through Ayurveda would be served as a real empowerment of vulnerable communities to manage disaster at their levels can be achieved by providing equal access to information to the national and international communities.

Key Words: Ayurveda, pshychosocial, mental, support, disaster

EMS in India – Are we too far?

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The very concept of Emergency Medical Services in India although originated more than a decade ago, is still in its infancy. The purpose of this article was to explore the possibility of providing EMS recommendations that may best serve the citizens. The study included the feasibility of providing excellent EMS services. Various studies, including a review of EMRI by the health ministry and Emergency Medical Service (EMS) in India: A Concept Paper found the gaps in the existing EMS in India. To focus on issues and challenges in the EMS system from the perspective of patients, EMS providers, and health system stakeholders due to various EMS model have been adopted by different states of India. A descriptive methodology of research was utilized for this project and a literature review was conducted primarily from different resources. A thorough review of gaps, were surveyed with the aim of identifying current trends and attitudes toward improvising that would assist leaders in focusing on improved EMS delivery that best served the community like Clarifying Roles, Responsibilities, Decision-Making and Accountability, Ensuring Minimum Standards in Service Provision, Standardized Funding of Road Ambulance Services, Initiate a Set of Pilot Projects in Support of the Mobile Health Vision, Develop a Strategy for First Responders, Emergency Medical Services Information System, Develop an Advisory Body in Support of System Governance, policies & directions, One Universal calling number and Emergency Physician involvement, effective public awareness. In the course of this review, the following recommendations come from conclusions based on information obtained from interviews, and a literature review from authors on the subject of EMS. To have committee which will develop a vision and target for the future of EMS next five years. The Committee should developed high level recommendations developing a Long-Term Human Resource Strategy, increase Accessibility of Educational Programming, support Recruitment and Retention Initiatives, Initiate a Set of Pilot Projects in Support of the Mobile Health Vision that, when implemented, will see the planned development of the EMS system in India into a high-performance health service will help to form a long-term plan for improving Mobile Health Services and ensuring they are as effective, accessible and fair as possible that will serve a broad range of patient care needs recommendations that would provide impetus for change within the existing system and enable a future system to develop.

A Novel Approach To Address Antimicrobial Resistance In ICUs

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Introduction

Worldwide there is an alarming rise in multi drug resistant pathogens that often fail to respond to conventional treatment, resulting in prolonged illness, greater risk of death and escalated treatment costs. Due to notable rise in anti microbial resistance combined with drying antibiotic pipelines and inability to bring new drug molecules timely to control growing menace of resistance has led to a renewed interest in optimization of current antibiotics. In 2011 on World Health Day, WHO gave a call to combat emerging antimicrobial resistance by stating "No action Today No Cure Tomorrow". From developed countries to developing nations all today are under antibiotic resistance threat. It is estimated that in Europe 25000 patients die each year and about Euro 0.9 Billion are spent on additional health care cost related to resistance similarly U.S. health care system costs in excess of $20 billion annually with more than $35 billion societal costs and additional 8 million days spent in hospitals. Situation is even worse in Indian ICUs and wards. This clearly indicated the gravity of situation.

Method

In this endeavor after an extensive research and study of different resistance mechanism adopted by bacteria for resistance, for more than 10 years, we arrived at a novel concept of development of Antibiotic Adjuvant Entity (AAE) . The idea was to go for translational medicine approach and develop a product/solution, which rejuvenates the existing molecules and empower them to fight resistance. The objective of this approach was to provide multiple benefits to the ailing society in terms of drastic cost reduction, to avoid over dependence on last resort antibiotics and to address problem of resistance not only by tackling super bugs (Klebsiella pneumoniae and A. baumanii) but also to provide a product which can prevent spread of resistance.

Results

Elores, is a novel, patent protected AAE launched for the first time in the world to cater ESBL and MBL producing gram negative infections particularly CRE (carbapenemase-resistant enterococci). In AAE one or more of existing broad-spectrum antibiotics are combined with a non-antibiotic adjuvant and presented one single product. Elores has been designed to effectively increase membrane permeability of bacterial cell wall, to inhibit the expression of efflux pump generally expressed in Pseudomonas and E.coli, prevent and break bacterial biofilms, de-activation of enzymes produced by bacteria for self defense which degrade most of the commonly used antibiotics in ICUs and to prevent transfer of F plasmid inter and intra species, thereby improving hospital ecology. Besides these, this new AAE offers a cost effective economic solution by reducing hospitalization time and cost from 40% to 80% in comparison to the most commonly used last stage antibiotics like Meropenem and Piperacillin tazobactam.

Conclusion

Elores offers a more safe, more effective treatment as proved by a series of clinical, preclinical, microbiological, molecular, and hospital-based surveillance studies. Elores is manufactured in a world class EU GMP, TGA, PICs certified plant with a huge capacity and be a pride for the country in field of hospital infection management and innovation.

Incremental CPR Skill Training Using Interactive animation

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This paper reports a novel approach to teach CPR (Cardio Pulmonary Resuscitation) skills through an interactive 2D animation. CPR is a life-saving intervention for cardiac arrests. Cardiovascular diseases have reached epidemic proportions in India, with an alarming rise in cardiac arrests. Survival Rate of CPR is disappointingly low inspite of the fact that American Heart Association (AHA) recently introduced "hands-only CPR," [Bobrow 2010] in which the rescuer only pushes down hard and fast without rescue breaths. A recent study shows that only about 2% of adults who collapse on the street and receive CPR recover fully [Hagihara 2012]. The enormous need for training Indian huge populace with hand-eye coordination that is essential for successful CPR, warrants cost effective training methods such as animation based, completely eliminating CPR hardware and the instructor. The CPR animation reported in this paper mainly focuses on four CPR parameters. Quality of hands-only CPR is mainly determined by Chest Compression Depth (CCD>5cms), Chest Compression Rate (CCR>100 per min), Chest Compression Fraction (CCF>80%), and Chest Recoil (CR=Full). The animation based training emphasizes incremental skill learning of each of these parameters for effective skills transfer. Each of the quality parameters are in turn emphasized in an interactive animation mode where hand-eye coordination of the trainee is necessary similar to a typical mannequin based simulators. Typical mannequin based CPR simulation training requires dedicated and experienced trainer to accompany the CPR simulation mannequin, but this is challenging when training people in large mass. In India animation based CPR Trainer could be an effective tool for training over the internet, which can be easily deployed for free. Since animation is available at any time in the internet even beginners in CPR training can learn the CPR procedures at their own pace because understanding and learning capability varies from person to person.

Key Words: CPR (Cardio Pulmonary Resuscitation); Animation; Cardiac arrest; Mannequin.

Innovations in Emergency Medical Services- An analysis from AHRQ (Agency for Healthcare Research and Quality) database

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Introduction

Innovation is one of the critical components of business productivity and competitive survival. Healthcare innovation is a continuous driving force in balancing cost containment and health care quality.

1. Last century has witnessed a proliferation of innovations in healthcare industry aimed at efficiency and cost effectiveness of healthcare system.

2. Innovation can be defined as —the intentional introduction and application within a role, group, or organization, of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, or wider society.

3. Healthcare is rich in evidence-based innovations, but a major challenge is the diffusion of innovations.

4. The purpose of the current study is to emphasize the role of innovation in the emergency medical services and the results that can be achieved by implementing these innovative measures.

Objectives

Enumerating innovations in emergency medical services from AHRQ (Agency for Healthcare Research and Quality) database. Analyzing the results obtained through these innovations. Identifying some of the key innovations based on the results in terms of improved efficiency in healthcare delivery.

Materials and Methods

A systematic search was done in AHRQ database using the words, “emergency systems” and “innovation”. The literature obtained was analyzed in terms of the type of innovation and the results obtained. The magnitude of results obtained by implementing these innovative measures was compared for each of them.

Results
A total of 35 studies were found that have adopted innovative measures in the emergency services. The innovative measures like patient and workflow management process, using electronic handoff notes, dedicated emergency teams, implementing ED (Emergency Department) protocols, providing remote consultations, use of checklists and decision support systems etc have lead to the improvement in ED in terms of decreased lengths of stay (from 9 to 3.5hrs), decrease in patients left without being treated (from 5% to 0.5%), increased patient satisfaction (from 15% to 20%), fewer diversions to other hospitals (89% decrease), decreased return ED visits(42% to 29%) and faster time to treatment(from 117 to 49minutes).

Conclusion
Innovations in emergency medical services have led to the significant improvements in ED performance, quality of care, patient safety and patient satisfaction. Any quality improvement work needs to take innovation into consideration. Wise and courageous choices of innovations and introduction of these innovations with quality improvement principles in mind will lead to development of healthcare systems in the future that will be able to better serve patients.

Key Words: Innovation, Emergency Department, Efficiency, Quality, Patient Safety

The Dashboard Monitoring Tool: An Emerging Concept In Performance Monitoring

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This paper presents a unique performance monitoring and informed decision-support mechanism named DASHBOARD Monitoring System. This web-based monitoring mechanism facilitates the beneficiary department(s) to review the performance at a glance. This strengthens the decision-making process for better management, by acting as evidence based monitoring and supervision tool. The basic structure of the Dashboard Monitoring tool has been developed and tested, and is ready for implementation subject to customization as per the department's requirements. This implementation is done by way of a 4-step process: Creation of Groups and Indicators, Data Entry, Analysis and Ranking, and Training and Hand-holding Support in the final implementation. It gives a simple visual interface providing at-a-glance view into key areas, measured by selected SMART (Specific-Measurable-Achievable-Realistic-Time Bound) indicators, that are first assigned relative weights as per their importance and are then clubbed into broad groups. Each unit/district is evaluated using Business Intelligence (BI) tools and given a score based on its performance in the specific indicators. This is then grouped to ascertain the overall performance of the implementing unit in terms of ranks and color-coded maps. These maps provide a comparison tool by way of a 5-colour band ranging from dark red (poor performance) to dark green (excellent performance). The system also provides other creative visual tools such as graphs, tables, charts and maps for quick interpretation, analysis and decision making. Such a simple visual representation helps the decision makers to get the overall performance status of a unit/district/block and thereby, identify, review, analyze and act on critical areas of concerns. Additionally, it helps to foster competitive spirit among the units to enhance their performance. The System also ensures transparency and easy access via website with separate logins for State, Regional and Unit functionaries to view and download information. Considering the importance of an efficient monitoring tool to ensure proper implementation of schemes and better decision-making process, the innovative Dashboard Monitoring tool has been deployed by the State Governments of Odisha, Bihar and West Bengal, supported by various consortium partners including IPE Global. Successfully initiated at a small level in West Bengal for Department of Health and Family Welfare, the initiative was further taken up by Department of Panchayti Raj, Odisha to monitor and efficiently manage its various ongoing schemes. The successful use of the tool is evident from Overall Performance results in the state that show all 30 districts marked as light green (Good Performance) in March 2013 as compared to only 2 districts in October 2012. Moreover, in terms of financial performance, only 6 districts were marked as light green (Good) in October 2012, which then increased to 15 with the remaining 15 districts marked as Dark Green (Excellent). The Dashboard has also been successfully used by Odisha's Women and Child Development Department to review quarterly progress of its ICDS activities, and then by Bihar's State Health Society, NRHM to assess various aspects of Healthcare. The Dashboard Monitoring Tool is, therefore, a unique user-friendly endeavor that integrates corporate management mechanism into government monitoring system.

E-Health: The way Forward

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It is adequately known that the problems in developing countries differ from those of the developed countries. The numbers succumbing each year from preventable/treatable causes amount to about 14 million. All these problems are caused by multiple interlinked factors like lack of knowledge, resources, clean water, sanitation and access to health services. The distribution of services is also dispersed wherein a patient has to travel more than 200 kilometres or for more than 6 hours to access them.

The reform strategies have to address:

- Extending the coverage of basic services to underserved population
- Improving poor service quality

- Addressing the inequitable distribution of resources, in the context of very limited institutional capacity. (Evans, 2005)

Less than 10% of the rural population of developing countries live within walking distance of any kind of health facility. WHO considers "walking distance" to be within 10 kilometres (Korcok M, 1979).

Health care in rural areas are manifest in the obvious geographic factors, limited public transport and road infrastructure, long distances to hospitals and recruitment of qualified personnel in rural health care services (Myrvang & Rosenlund, 2007). Lack of resources along with additional factors like logistic difficulties, socio-political factors and inappropriate donor interference contribute to the prevailing state. (Wootton R, 1997)

The Solution

E-health was introduced in the latter part of the twentieth century (Healy, 2008) Technology enabled individuals to consult doctors over the phone thus permitting transmission of electrocardiograph records over telephone lines (Healy, 2008). E-health is the intersection of medical informatics, public health and business referring to health services and information delivered or enhanced through the internet and related technologies. G.Eysenbach (2001) In India, Information Technology has indeed achieved significant milestones, but the benefits have yet to be fully exploited. A lot needs to be achieved in terms of establishing a point of healthcare and enhancing the quality of care from this point. Content, connectivity, community and clinical care are the important 5C's in e-health (Lee et al.). E-health can help build capacity and improve the quality provided thus improving health systems.

Scope of e-health

- Health Kiosks: provide information about availability of health care facilities and basic care to be initiated at home in case of minor illness.
- Online health services: This facility has been successful in metro cities and tertiary care centres.
- Smart Card: Aadhar cards with health data incorporated
- Strengthen IDSP (Integrated Disease Surveillance Project): India faces round the year public health issues. Heat Stroke (May-July), Floods (July-September), tropical diseases (peak during June-November): Malaria, Leptospirosis, Dengue, natural calamities and religious congregations where utilization of e-technology can be utilized.

It is evident that applications of telemedicine in a vast country of the size of sub-continent in an organised, co-ordinated, predictable and consistent could be an enormous task.

A planned, evaluated framework is the answer that can be developed and implemented which is country specific and Government authorised. A regularly reviewable, up-scalable micro model is proposed for the whole country.

Management of The Dead In The Aftermath Of Disasters

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India's unique geo-climatic conditions make it vulnerable to natural disasters and courtesy technological advancements, man-made disasters are gradually extracting their toll. Disasters of any aetiology have a common denominator of large number of deaths in a short span of time for which the Administration is saddled with. This indomitable task entails the retrieval and recovery of the dead, followed by their storage under optimum conditions for preservation and then utilization of latest identification technologies to enable handing over of the mortal remains to their next-of-kin. However, initial media focus on the dead coupled with the myth of being causative for epidemics, have universally culminated into mass burials or mass cremations without identification, resulting into social, psychological, emotional, economic, and legal repercussions as have been evident after all major natural disasters that have struck our country or man-made disasters. Consequent to the enactment of the Disaster Management Act, 2005, there is paradigm shift from erstwhile response-centric approach to the holistic management of disasters. The National Disaster Management Authority so constituted vide this Act has formulated the National Guidelines on this sensitive issue entitled "Management of the Dead in the aftermath of disasters". Based on these Guidelines, Plans are to be made at all echelons of governance. These Guidelines are designed to provide not only technical information on Primary and Secondary methodologies of Identification, but also dwell on administrative aspects that will support the correct approach in dignified handling of the dead bodies, with the highest possible quality of standards/measures, functioning in an interdisciplinary manner, to ensure positive identification of victims. With the backdrop that no formal training is being imparted to all categories of stakeholders for their role in the management of dead bodies coupled with scarce resources in terms of dead body recovery modalities, their transportation, storage in temporary mortuaries and limited DNA laboratories for this time consuming process of primary identification in our vast country calls for comprehensive capacity building for the successful management of this sensitive aspect. It is therefore imperative to plan for temporary mortuaries with appropriate refrigeration facilities in the form of containers which can also be airdropped at the affected site. This when duly incorporated in the National, State and District "all hazard" Disaster Management Plans under the ambit of the institutionalized Incident Response System, will then achieve the desired aim that no dead body should be laid to rest, unidentified.

Key Words: Disaster Victim Identification, Primary methods of Identification, Secondary methods of

Identification, Temporary Mortuary, Disposal of Unidentified Dead

Analysis of Variation of Fatigue Using Visibility Graph Similarity-based Brain Networks

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Various areas of the brain communicate with each other through rhythmic neuronal oscillations to carry out specific tasks. Such communication is marked by a tendency of the regions to synchronize or desynchronize with each other. The integration or segregation of brain areas gives rise to various physical and mental activities. For example, neuronal networks start to oscillate at different frequencies during mental activities, i.e. they show de-synchronization, whereas synchronous oscillation is observed during resting state. Various brain functions, including the cognitive, depend on the effective integration of brain networks and the functional interactions between different areas of brain. Brain networks have been used extensively in different research areas as task classification, disease detection, sleep study etc. Coordination between brain areas has been extensively studied by the analysis of synchronization of EEG signals generated in these areas. Synchronization measures between EEG signals from different regions of the brain characterize the integration and segregation of brain areas during any mental and physical activity. Various synchronization measures are reported in literature such as correlation, phase synchronization, Synchronization Likelihood, Visibility Graph Similarity etc. However, correlation is a linear measure and not suitable for nonlinear EEG signals, whereas phase synchronization captures only the phase information and misses out on the amplitude data. Among all, the Visibility Graph Similarity technique is reported to be better than the other measures. The Visibility Graph technique may be applied to study of variation of fatigue and circadian rhythm of human subjects in a sleep-deprived experiment. A complex network is formed at each stage of experiment and the change in the degree of connectivity along successive stages of the experiment has been quantified using a number of network parameters. The variation of characteristic path length and clustering coefficient have been chosen as measures of functional integration and segregation, respectively. The parameters of the brain network have also been compared with that of a random network (generated with a random degree of connectivity) to establish the small-world nature of the brain network.

Key Words: EEG Synchronization, Visibility Graph Similarity, Characteristic Path Length, Clustering Coefficient, Small-world Network

Restructuring emergency laboratory profile: A review of the need at tertiary cancer care centre

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Introduction

Acute care settings are often plagued with waits, delays, and dissatisfaction. Nowhere is this more observable and its impact more palpable than in hospital emergency departments. Hospitals are increasingly being challenged to address Emergency services with highest quality and priority. Patient safety, patient and staff satisfaction, and hospital bottom lines can all be negatively affected if the emergency services are not provided in a timely and reliable manner. Thus, there is a pressure zone also built up in the Emergency laboratory services provided. A retrospective analysis was carried out on the tests ordered in the emergency hour's i.e.18:00 hours to 06:00 hours at ACTREC laboratory facility in the areas of Haematology, Biochemistry and Microbiology.

Objectives

1. To identify the test parameter that is in highest demand during the emergency hours
2. To review the TAT of the emergency laboratory services
3. To set goals for further improvement of the emergency laboratory services

Methods

A retrospective analysis of all the test requests received for one month i.e. June 2013 for only the emergency laboratory. Accordingly, 192, 235 and 57 requests received for Haematology, Biochemistry and Microbiology were analysed.

Results

1. It was observed that the demand for CBC (58.89%), Coagulation (40.07%), MP (0.70%), Fluid cell count (0.34%) in haematology. Electrolytes (26.17%), RFT (18.75%), LFT (18.32%) whereas the rest 15 parameters constituted <10% of the total tests ordered for Biochemistry. Similarly, blood c/s (29%), PICC (19%) were in demand and rest three parameters <10% for Microbiology tests.
2. The TAT for all the tests ordered in emergency were well within the defined TAT by laboratory ,also about 9.79% of the total tests requested for Haematology , Biochemistry and Microbiology were subjected to Critical reporting.

Conclusion

Appropriate laboratory test ordering would promote, appropriate utilization of laboratory services. This shall be taken as educational initiatives providing the clinicians with guidelines for optimal laboratory test selection. Also, available laboratory test profiles shall be restructured to

match clinical problems, treatment and patterns of clinical thinking.

Key Words: Emergency laboratory, TAT, critical reporting, Haematology, Biochemistry, Microbiology

Aeromedical Evacuation – Medanta-The Medicity Experience (Ongoing Analysis)

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Introduction Medanta-the Medicity Hospital, Gurgaon Haryana, is a leader in the field of Air medical evacuation in India. We are now operating with brand name of Flying Doctors India. We have done around 630 Aero-Medical Transportation of patients both national and inter-continental with over 5000 man flying hours. We present an audit of all air transportation data from November 2009 to July 2013.

Material and Method

This is an audit of medical records of all the Aero-Medical Transportation undertaken by the hospital during the specified time. The data is presented in tabular form.

Results (details to follow)

Variable	Number
Total number	630
Total man hours	5030 hours
Mean age of patient	46.7 YEARS
Gender (M:F)	69:31:00
Ionotrops use (hours)	1033 hours
Need for CPR	4
With ET Tube in-situ	160
Emergency R S I	5
Need for invasive lines on board	28
Previously on IABP	26
Mortality during transport	2
Dedicated aircraft	576
Scheduled Commercial airline with stretcher	54
Within India	570
International	60

Discussion

There is need for all invasive and advanced monitoring required for aero medical transportation as in the critical area of the hospital. Unforeseen situations may arise. The medical staff should be fully equipped and competent to handle the arising situations as many of the interventions may need to be done in constrain of space and help. We propose a training and certification courses for medical and paramedical staff with emphasis on the effects of high altitude and atmospheric pressure on physiological and hemo-dynamical parameters. We at Medanta have dedicated team of Flying Doctors and fleet of dedicated air-crafts to respond in a shortest possible time to meet aero medical transportation needs to and from anywhere in the world.

Key Words: Air Ambulance, Medevac, Aeromedical Evacuation, Flying Doctors India, Medical Escorts

Baseline assessment of pre-service education for nursing and midwifery in Haryana, India

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Background

Despite the substantial increase in institutional deliveries in Haryana, India during the last 8 years, maternal mortality and neonatal maternal mortality are not declining, and stillbirth rate is showing increasing trends; thus pointing to sub-optimal quality of care at public health facilities. The in-service training of auxiliary nurse midwives and staff nurses is also not able to ensure optimal competency of the providers presumably due to poor quality of pre-service education (PSE) at ANM training centres (ANMTCs) and general nurse midwives training centres (GNMTCs). Training infrastructure of the schools, and management capacity are the most critical dimensions of PSE. Only these can help achieve other three critical dimensions, namely, improved educational processes, improved clinical practices at the respective clinical practice sites, and clinical and teaching skills of the faculty.

Objective

The objective of this paper is to assess the gaps in training infrastructure (class rooms, skill labs, IT labs), and management and leadership capacity of all public ANMTCs and GNMTCs and selected private ones in the state, with the ultimate goal of strengthening PSE in the state. It was also intended to assess the baseline knowledge and skills of all students in the selected institutions.

Methodology

The Government of India has set up simple, measureable performance standards, which provide the framework for program support and a criterion-based quality improvement system. Baseline assessment was done in all public ANMTCs (8), all public GNMTCs (3), 17 private ANMTCs (24.3 %), and 19 private GNMTCs (27.1 %) in all 21 districts of the state using 13 performance standards for school infrastructure and training materials and 16 standards for school management. In addition, knowledge of final year students of all selected schools was tested through an objective and subjective assessment and their skills were also assessed.

Results

Only one ANMTC (private) and one GNMTC (public) could achieve all performance standards for schools infrastructure and training materials. The average composite score (on a scale of 100) was 10.4 (sd: 10.8) for public ANMTCs, 33.3 (sd: 25.2) for private ANMTCs, 53.8 (sd: 33.2) for public GNMTCs and 42.9 (sd: 15.4) for

private GNMTCs. None of the ANMTCs and GNMTCs could achieve all 16 performance standards for school management, with average composite score being 43.8 (sd: 26.5) for public ANMTCs, 48.2 (sd: 25) for private ANMTCs, 58.1 (sd: 22.7) for public GNMTCs and 45.4 (sd: 18.4) for private GNMTCs. The average score for knowledge assessment of students in public GNMTCs was 72 (sd: 8.5), 56.7 (sd: 4.6) in private GNMTCs, 50.3 (sd: 4) in public ANMTCs, and 48.5 (sd: 6.8) in private ANMTCs.

Conclusion

Overall, the basic infrastructure is sub-optimal for public GNMTCs, and even worse for public ANMTCs. Computer labs and skill labs are inadequately equipped, but the knowledge and skills of students at public TCs was better than private TCs. As supervision and monitoring of PSE was found lacking, 5 consultants have been hired and are being trained to pay quarterly visits to all ANMTCs and GNMTCs in the state to conduct supportive supervision activities to strengthen all 5 critical dimensions of PSE (all 82 performance standards) in midwifery and nursing.

Key Words: Nursing, midwifery, pre-service education (PSE), performance standards, ANMTCs, GNMTCs.

Challenges for Children Ambulance Service & Pre Hospital Care in India

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Children injured or ill need efficient Emergency Management System (EMS) to reach for desired medical support at the earliest. It is not only the access of roads but also technological advancement to support all in the connecting system. Failure to link may end up in undesired and ineffective methods and practices which over a period of time may be detrimental to the well-being of the society. An effective seamless connectivity from call taker to the receiving medical facility should be supported with good logistic system. The major challenges in the system to be encountered can be on three fronts. First-the traffic management system to reduce delay in transfer, then child restraint procedure to ensure safety and finally life support system in the vehicle to encounter warning symptoms. This paper address all these challenges on integrated front with –vehicle design for better mobility, best practice for better child restraint procedure and with suggestions for pre hospital care to avoid panic. In prevailing environment there seems to be less or no special attention focused on child care. No special attention is provided to the Indian rural segment. This is likely to have greater imbalance towards pre medical care between urban and rural environment. This point is separately focused to understand India effort in reaching the Millennium Development Goals (MDGs) by 2015. Data has been obtained through personal interview questions and from various published literature both print and online.

Key Words: Ambulance design, Child restraints, Safety, Life support system, EMS, MDG

Treatment of chronic osteomyelitis through localized delivery system: Bench to bed side

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Chronic osteomyelitis is an osseous infection that progresses to bone necrosis and sequestrum formation and is a burning problem in the field of orthopedic and reconstructive surgery. In spite of countless antibiotics availability and significant advances in surgical treatment, the long-term recurrence rate of osteomyelitis remains shocking at a rate between 20% and 30%. Moreover, patients feel frustrated and disappointed with therapeutic outcomes and development of adverse drug effects. In this study, we have established a micro porous hydroxyapatite local drug delivery system having 50-55% porosity with an average pore size ~110 µm (±5 □m), high interconnectivity (10-100 µm), moderately high adsorption efficiency (~50%) when loaded with CFS [an antibiotics combination composed of sulbactum sodium (SUL) and ceftriaxone sodium (CFT) in 2:1 ratio]. Further, both the results of in vitro and in vivo drug elution in animal model after 42 days showed CFS release higher than minimum inhibitory concentration (MIC) against Staphylococcus aureus. In a nutshell, in vivo studies also proved the superiority of CFS-loaded HAp implants than parenteral group based on eradication of infection and new bone formation. In the human trial, out of 10 patients included in the series, eight were having chronic osteomyelitis in tibia, one in mastoid and one in mandible. In every case there was one or more discharging sinus. In five cases of osteomyelitis of tibia there were soft tissue loss as a result of trauma and infection. The cause of chronic osteomyelitis of mandible and mastoid bone were sequlae of apical root abscess and chronic suppurative otitis media respectively. In one case there was partial extrusion of implant 5 weeks after the operation though the osteomyelitis was healed. The cause probably was failure of incorporation of implant due to loss of contact with healthy living bone (basic requirement of tissue engineering). Otherwise all the patients showed complete recovery without any further operations and complications. All the fractures were united and patients started unsupported weight bearing. The periodic radiographic observations after implantation of CFS impregnated porous HAp implants showed gradual evidence of new bone formation and union of fracture. Pre-operative radiographs showed all the features of chronic osteomyelitis including sequestrum formation in addition to sclerotic fracture lines and local osteopenia. Post-operative radiographs up to 4 months, the CFS-HAp implants were identified. After that they became hazy due to incorporation into newly formed bone. Evidence of organization of callus was present from 6-8 months.

Histopathology section showed the well-developed Haversian canals with fibro-vascular structure along with neo-vascularization at sites. 2D CT studies of operated area in different sections and its 3D reconstruction was performed after 8 months of operation. It shows evidence of bone formation and cortico-medullary differentiation at the operated site with healed lesion. In all patients, the local antibiotic-HAp implants biodegraded and biocompatible and the bone showed progressive repair without evidence of either residual or new osteolysis. There were no unusual periosteal changes during the course of therapy. None of the patients had significant drainage or adverse reaction to the local antibiotic implants.

Entrepreneurial Nursing Initiatives: Challenge of Health Care

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Introduction

Health reform worldwide is required due to the largely aging population, increase in chronic diseases, and rising costs. To meet these needs, nurses are being encouraged to practice to the full extent of their skills and take significant leadership roles in health policy, planning, and provision. This can involve entrepreneurial or intrapreneurial roles.

Why need of nurse entrepreneur?

The unique skills held by generalist and specialist nurses are often under utilised.

- Nurses comprise the largest proportion, up to 80% of the health workforce and are considered to be the front line staff across the health continuum.

Entrepreneurship in Nursing: Nursing entrepreneurship provides nurses with self-employment opportunities, which allow them to pursue their personal vision and passion to improve health outcomes using innovative approaches.

Qualifications need to be a Nurse Entrepreneur:
Must be registered with regulatory body as a practicing member and have:

- Appropriate education and experience to practice competently within your chosen area of Nursing expertise.
- Consultation and communication, public relation and accounting skills
- Marketing and management skill
- Knowledgeable in legal, insurance, grants and tax matters
-

Nurse Entrepreneur focus area:

- Independent Contracting, Nursing Agency, Ambulatory Care, Intravenous Case Management, Labor and delivery
- Education and Training, Emergency Nursing, infection Control, Informatics, Pharmaceuticals and
- Medical sales, Recruiter, Rehabilitation, Travel, Emergency Medical services pre-hospital
- Genetic Nursing, Pediatric Nursing, senior health services
- Outcome of Entrepreneurial Nursing Initiatives
- Improve the quality of nursing care and the nation's healthcare system
- Become a part of the larger health care system
- Demonstrate quality professional practice
- Reduce health care costs for the consumer

Conclusion

There is growing recognition of the important contributions made by nurse entrepreneurs within health systems and an acknowledgement that nurse entrepreneurship promises future advancement in health care.

Hang-up iud, new technique for suturing iud cut 380a to uterine fundus in postplacental insertion during cesarean delivery : 32-month follow up

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Objective

To determine the outcome of CuT380A IUD post plasenta insertion at cesarean section delivery using new technique for suturing to the center of uterine fundus (hang up technique).

Setting

Tertiary teaching hospital

Method

Hang-up technique consist of penetration using straight needle through to the center of fundus uterine wall , anchor knot tying at crossing arm of IUD CuT reinforced with one or two simple knot, then pull and hang up to fundus. Women underwent a cesarean section delivery in June 1, 2009 until March 31, 2012 conducted post-placental IUD CuT380A insertion. Follow-up was for 32 months, includes history, physical examination, ultrasound and questionnaires at the controls, through home visits and by phone. The 1st monitoring is ≤ 6 weeks after delivery, the 2ndmonitoring was > 6 weeks up to ≤ 3 months, the 3rd is > 3 months up to ≤ 6 months, the 4th is> 6 months up to ≤ 12 months, the 5th is > 12 months up to ≤ 24 months and the 6th is > 24 months up to ≤ 32 months after insertion. The results of the questionnaire were statistically analysed and presented descriptively.

Results

Of 716 women underwent IUD CuT380A insertion at cesarean section delivery obtained 675 (94.3%) was observed in the 1st monitoring, 577 (86.6%) was observed in the 2nd monitoring, 475 (79.3%) was observed in the

3rd monitoring, 405 (82.2%) was observed in the 4th monitoring, 208 (76.5%) was observed in the 5th monitoring and 74 (72.5%) wa observed in the 6th monitoring. Among women with the use of ≥ 12 months, 282 (72.45%) of 374 women were observed, the incidence of discontinuation due to menstrual disturbances reason 1 (0.35%), personal reasons there were 5 (1.77%), the reason for vaginal discharge was 6 (2.12%), and because unintended pregnancy was 3 (1.06%). There are no events perforation and expulsion.

Conclusion

Immediate post-placental insertion of IUD CuT-380A using hang-up technique after 24 months follow-up is safe and effective. Typical use effectiveness is high (98%), continuation rate is 95,56% , no expulsion and perforation events reported.

Key Words: post-placental IUD insertion during caesarean section, hang up technique, anchor knots, typical use.

Modification Technique Immediate Postplacental Insertion Of Cut380 Iud In Vaginal Delivery Using Ring Forceps And Standard Inserter: 32-Months Follow Up

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Objective

To determine the outcome of CuT380A IUD postplacental insertion in vaginal delivery using new modification insertion technique.

Setting

Tertiary teaching hospital

Study Design

Prospective cohort study of postplacental IUD insertion in vaginal delivery using 'push and push' technique, a modification technique using ring forceps and standard inserter. Women underwent a cesarean section delivery in June 1, 2009 until March 31, 2012 conducted postplacental IUD insertion. Follow-up was for 32 months, includes history, physical examination, ultrasound and questionnaires list at the controls, through home visits and by phone. The 1st monitoring is ≤ 6 weeks after delivery, the 2ndmonitoring was > 6 weeks up to ≤ 3 months, the 3rd is > 3 months up to ≤ 6 months, the 4th is> 6 months up to ≤ 12 months, the 5th is > 12 months up to ≤ 24 months and the 6th is > 24 months up to ≤ 32 months after insertion. The results of the questionnaire were statistically analyzed and presented descriptively.

Results

Of 1.360 women underwent IUD insertion at vaginal delivery obtained 1.228 (90,29) was observed in the 1st monitoring, 1086 (88,65%) was observed in the 2nd monitoring, , 866 (85,99%) was observed in the 3rd monitoring, 558 (78,04%) was observed in the 4th monitoring, 248 (73,37%) was observed in the 5th monitoring and 103 (70,55%) was observed in the 6th monitoring. In the women with the use of ≥ 12 months, 248 (73,37%) of 282 women were observed, the incidence of discontinuation due to menstrual disturbances reason was 1 (0.4%), and because unitended of pregnancy was 1 (0,4%). Expulsion rate was 8 (3,2%) and there are no events perforation.

Conclusion

Immediate postplacental insertion of CuT-380A IUD using 'push and push' technique is safe and effective. Typical use effectiveness is high (99,6%), continuation rate is 97,2% , low expulsion rate (3,2%) and no reported incidence of expulsion .

Key words: postplacental IUD insertion vaginal delivery, 'push and push' technique, typical use, continuation rate.

Morbidity profile of patients reporting to the Emergency ward at CRHSP, Ballabgarh in year 2012

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Introduction

Comprehensive Rural Health Services Project (CRHSP) is a secondary level health facility located in Ballabgarh Tehsil of District Faridabad Haryana. We wanted to document the morbidity profile of the patients reporting to the Emergency ward of this health facility.

Methods

We reviewed the records for the period January 2012 to December 2012. Statistical analysis was done by calculating frequencies and percentages.

Results Clinical details of 69 attendees were not available and they were excluded from the study. The remaining 2366 case records available for the period under study were analyzed. Almost equal numbers of males and females (49.87% and 50.1% respectively) reported to the emergency ward. Three categories i.e. Medico legal cases (24.58%), GIT (23.65%) and Obstetrics cases (20.85%) contributed almost equally; and constituted to 2/3rds of all the patients reporting to Emergency ward. Recommendation: The Medical and Para-medical staff posted at emergency ward could be provided CME and given a skill training on these three topics so that good quality care can be provided to the patients. The morbidity profile could also help the health managers in procurement of material and supplies required at this hospital.

Predicting one year mortality in adult injured patients admitted to the trauma centre of CSMMU

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Introduction

Conventionally trauma mortality is predicted using scores based on anatomical, physiological, or a combination of both types of criteria. Studies have demonstrated factors that predict mortality independent of severity scores.

Traditionally time distribution of trauma related mortality is said to follow a tri-modal distribution. The objectives of the study were to identify predictors of one-year mortality, determine their magnitude and significance of association prioritize them based on effect size, identify modifiable factors and design a prediction rule.

Methods

IInformation regarding factors known to affect mortality was recorded i.e. age, sex, preexisting chronic conditions, Injury Severity Score (ISS), inter-hospital transfer, blood sugar level at admission, blood pressure at admission, coagulopathy at admission (APTT), massive blood transfusion, iatrogenic mistakes. Other factors that may affect mortality were also included. These are number of surgeries performed on the patient and his socioeconomic status (below poverty line card). Patients were followed up for a period of one year.

Results

On logistic regression, one year mortality was found to be predicted by age, ISS, APTT, GCS score at admission and Cervical spine injury but mortality after 6th day was found to be predicted exclusively by GCS score at the time of admission. Cox proportionate hazard model identified age, ISS, systolic BP at admission, and GCS at the time of admission to be significant predictors of one year mortality. Bootstrapping of the logistic regression model and cox proportionate hazard model identified age, ISS, APTT, and GCS score at admission to be significant predictors of one year mortality. However systolic BP and cervical spine injury were found to be insignificant.

Discussion Multivariate analysis (logistic and cox proportionate hazard analysis) and subsequent boot strapping provide us with a set of factors which may be considered as valid predictors universally. These include age, Injury Severity Score, activated plasma thromboplastin time and Glasgow coma score.

New solution to an old problem: providing pre-hospital emergency care in Bihar under severe resource constraint

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Formal integrated pre-hospital systems in India are not universally available. It is essential therefore that alternative models of service provision are developed. One such is QMRT (quick medical response training), launched by the Surgery Trauma and Emergency Care at AIIMS Patna, in close cooperation with the government of Bihar (Department of Disaster Management), the National Disaster Response Force (NDRF), and R Adam Cowley Shock Trauma Centre, Baltimore USA. The Bihar Government has identified a total of 197 districts for ongoing implentation of a unique practical capacity building programme in which a 5 member team team including a doctor, two professionals allied to medicine (PAMs) and two middle ranking police officers are undergoing enhanced first responder training. Tests of the participants' knowledge and clinical confidence improve to a very high level of statistical significance. The results are presented in the paper and the implications discussed.

Designing and implementing an enhanced first responder curriculum for use under resource constraint: the Bihar experience

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First responder training is well established, especially in developed health care systems where integrated emergency pre-hospital care exists. These have evolved in response to local needs and legal framework. As yet no such programme has evolved specifically for countries where resources are a major constraint and standards health care show a wide variation. The authors present QMRT (Quick Medical Response Training), which has been very successfully adopted by All India Institute of Medical Sciences, Patna from the IFRAME programme of the R Adam Cowley Shock Trauma Centre, University of Maryland, USA. Its implementation is now well established. The curriculum is presented in the paper and its rationale, challenge and success is discussed.