



NewsLetter

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EDITORIAL

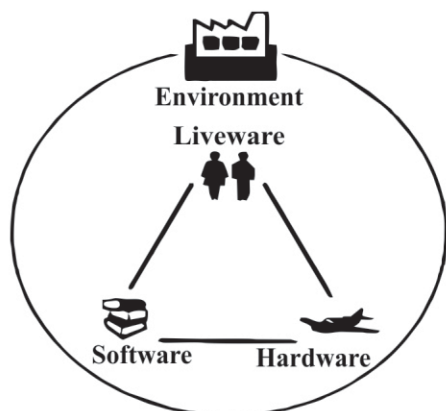
UNDERSTANDING HUMAN FACTOR RELATIONSHIPS TO IMPROVE PATIENT SAFETY

Healthcare largely depends on direct human interventions. It has many goals, which span from preserving life and relieving distress to a wide range of mundane services all of which society demands must be performed safely and efficiently. It is arguably more complex than any other industry. It is extremely resource sensitive. Patient safety and quality improvement are dependent on human behaviour.

Human factors (HF) is the study of the interrelationship between humans, the tools they work with and the environment in which they work. The SHELL model was designed to help understand these relationships.

SHELL Model

- Software
- Hardware
- Environment
- Liveware (Individual)
- Liveware (Group)



The SHELL concept is named after the initial letters of its components Software, Hardware, Environment and two Livewares. In the centre of the model is the human operator, or the first Liveware, represented by 'L'. This may be any individual whose job is relevant to patient care. It is the most flexible component in the system but may be unpredictable due to individual factors such as personality, motivation, stress tolerance, skills, knowledge and attitudes.

To overcome these intrinsic limitations the interface with the other components of the SHELL model must be adapted and matched to the Liveware component for optimum performance.

- The first interface, Liveware - Hardware, has much to do with the ergonomic design of the tools and medical devices that are used and designed in such a way that they should, for example, make it difficult for the user to make a mistake.

- The Live ware - Software interface encompasses the non-physical aspects of the system such as manuals, check lists and computer programs. An adequate Liveware-Software interface should produce a situation where procedural omissions are difficult to make.

- The Livewar - Environment interface may include stressors in the physical environment that have to be coped with such as noise, poor acoustics and overcrowding.

- The second Liveware - Liveware interface is the interface of interpersonal communication. It embraces concepts such as team coordination, conflict resolution and the continuity of information flow in the care of patients.

In the SHELL model diagram the edges of the blocks are uneven. This is to illustrate the fact that the interdependent components are constantly changing and will never match perfectly. HF are concerned with minimising the mismatch between the different components. Medicine will never be a risk-free enterprise.

From the beginning of training, doctors are taught that errors are unacceptable and that the philosophy of primum non nocere (first, do no harm) should permeate all aspects of treatment. Yet, worldwide, despite all the improvements in treatment and investment in technologies, training and services, there remains the challenge of dealing with unsafe practices, incompetent healthcare professionals, poor governance of healthcare service delivery, errors in diagnosis and treatment and non-compliance with accepted standards. Patient safety has become an established healthcare discipline in its own right thus formalising approaches to these inadequacies, directing research and offering solutions for the future.

The aviation and nuclear industries have a much better safety record than healthcare. According to reports there were between 44,000 and 98,000 preventable deaths annually due to medical error in American hospitals with some 7,000 preventable deaths related to medication errors alone. It has also been stated recently that if medical error was a disease it would rank as the third leading cause of death in the United States after heart disease and cancer. The problem of error can be viewed in two ways – from a person approach or from a system approach.

Surgery is one of the most intrusive healthcare interventions. Errors that can potentially be committed by surgeons during the care of their patients include:

- Diagnostic and management errors;
- resuscitation errors,
- prophylaxis errors;
- prescription/parenteral administration errors;
- situation awareness, identification and teamwork errors;
- Technical and operative errors.

Operating rooms have been described as “among the most complex social and cultural structures that exist, full of ritual, drama, hierarchy and too often conflict”. In such an environment, systems should seek to prevent error by improving workplace preparedness and by incorporating defences so as to reduce human error or minimise its consequence. Well recognised and potential errors include:

to be continued on 4th Page

HOW LIQUID BIOPSY IS REVOLUTIONIZING CANCER TREATMENT

Liquid biopsy has completely transformed clinical oncology, creating a new dimension for cancer care with personalized treatment. This minimally invasive technique is highly beneficial in providing better clinical outcomes by identifying actionable cancer biomarkers, early diagnosis, and easing tumor sampling, especially when solid tissue biopsies are insufficient or unable to obtain.

What is Liquid Biopsy?

Liquid biopsies are minimally invasive blood-based tests that involve isolating tumor-derived entities present in body fluids, such as circulating tumor cells (CTCs), circulating tumor DNA (ctDNA), and plasma cell-free DNA (cfDNA), followed by analysing the genomic data contained within them.

In recent years, liquid biopsy has emerged as a powerful tool in the fight against cancer. Here are some of the ways it is revolutionizing cancer treatment:

1. Early detection of the disease

A stark observation seen in cancer patients is the presence of a high level of cfDNA in their blood as a result of cellular necrosis or apoptosis as tumor cells divide faster than normal cells, and cfDNAs are released in a high proportion. The fraction of cfDNA that is derived from tumor cells is named circulating tumor DNA (ctDNA). In recent years, both cfDNA and ctDNA have gotten huge attention as novel blood biomarkers, as quantification and kinetic analysis of cfDNA and molecular profiling of ctDNA have suggested their predictive and prognostic values.

One of the most promising and crucial features of liquid biopsy is that it enables the early detection and screening of cancer. We are aware of the fact that early diagnosis of cancer paves the way to eradicate cancer cells, therefore we can rely on this potential technique which can allow patients to improve their quality of life (QoL).

2. Monitoring Treatment Response

There are many challenges faced by the patient in a tissue biopsy since it is an invasive technique such as continuous monitoring of the prognosis, tumor heterogeneity, uncertainty of tissue availability, etc. which can be overcome by Liquid Biopsy.

Liquid biopsy being a simple blood test, therefore, has become a better alternative for continuously monitoring the prognosis and progression of the tumor. This simple blood-based test enables the clinician to make treatment decisions that will give the patient better chances of fighting cancer.

Unlike other diagnostic techniques, the tumor-derived blood analytes in liquid biopsy like cfDNA, ctDNA, CTCs, etc., reflect a complete picture of the tumor's mutation profile, enabling targeted therapy directed toward a single mutant gene contributing to personalizing cancer treatment regimens

3. Personalized Treatment

The goal of personalized treatment is to eliminate the “one size fits all” model of treatment regimens, which is centred on average response to care, by shifting the emphasis to tailored treatment according to disease biology and predicted treatment response in each patient for every patient.

4. Minimal Residual Disease

Liquid biopsy can also be used to detect Minimal Residual Disease (MRD) in cancer patients who have undergone treatment. MRD refers to the small number of cancer cells that survive after treatment. These cells can be difficult to detect with traditional imaging scans, resulting in disease recurrence.

Doctors can detect MRD in patients who have received treatment by analysing the levels of cfDNA, ctDNA, or CTCs in their blood. This data can be used to track patients' disease recurrence and adjust treatment plans as needed.

In conclusion, liquid biopsy is a promising technology that is reinventing how cancer is diagnosed, monitored, and treated. It provides a less invasive, less expensive approach to cancer screening and can provide real-time information about how a tumor is responding to treatment, as well as indicating the likelihood of relapse in patients, allowing them to plan their treatment accordingly.

Dr. Kapil Goyal
Consultant – Medical Oncology
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17TH ACADEMIC LECTURE SERIES OF RGCIRC



RGCIRC organized an academic lecture on Friday, 14th July 2023 at Indraprastha Hall, RGCIRC, Rohini, Delhi. Mr. Justin F Gainor, Director for Thoracic Cancers and Director of Targeted Immunotherapy, Massachusetts General Hospital, Associate Professor, Medicine Harvard Medical School delivered a lecture on **Optimizing Treatment Options in the Management of ALK+ mNSCLC**. The lecture was attended by more than 70 staff members of RGCIRC including Directors, Sr. Consultants, Consultants, Attending Consultants, Resident Doctors etc.

17TH CHEMOPORT TRAINING PROGRAMME

Department of Surgical Oncology, RGCIRC successfully organized the 17th training course in Chemoport Insertion on 05th July – 06th July 2023 at Indraprastha Hall, RGCIRC, Rohini, Delhi. This 2 days course was held for doctors from various oncology centres who desired to learn this technique. It entailed interactive session by the faculty of RGCIRC as well as hands on training in the operating rooms. The topics covered were Chemoport Insertion, Hickman's Catheter Insertion, Pediatric Port, Arm Port. The course was highly gratifying and we received an excellent feedback.



CME WITH IMA KARNAL, HARYANA



RGCIRC organized a CME program in association with Indian Medical Association (IMA), Karnal on Saturday, 08th July 2023 at Noormahal Palace, Karnal, Haryana. Dr. Amitabh Singh, Consultant – GenitoUro Oncology delivered a lecture on **Robotic Surgery in Uro Oncology** and Dr. Pankaj Goyal, Consultant - Medical Oncology spoke on **Recent Updates in Breast Cancer Management**.

The audience was thoroughly impressed by the insights shared and the depth of knowledge displayed by the speakers. The IMA Karnal members expressed their gratitude towards the RGCIRC faculty and extended a warm welcome to them and other team members from RGCIRC and promised to continue their support for RGCIRC.

Overall, the event was a great success, providing a platform for the dissemination of knowledge and the exchange of ideas in the field of oncology.

CME WITH INDIAN MEDICAL ASSOCIATION (IMA) OUTER WEST BRANCH

RGCIRC organized a CME in association with IMA Outer West Branch on Saturday, 15th July 2023 at Hotel Radisson Blu, Paschim Vihar, New Delhi. Dr. Rajeev Kumar, Sr. Consultant & Chief of Breast Surgical Oncology Unit – 1 delivered a lecture on **Artificial Intelligence in Oncology** and Dr. Kundan Singh Chufal, Sr. Consultant & Unit Head – Radiation Oncology spoke on **Recent Advances in Radiation Oncology: from Cure to Quality Life**. The CME was very well appreciated by the gathering.



APICON 2023 NOIDA CHAPTER



RGCIRC participated in 8th Annual Conference of Association of Physicians of India – Noida Chapter on Sunday, 23rd July 2023 at Hotel Radisson Blu, Noida, UP. Dr. Vineet Talwar, Director – Medical Oncology delivered a lecture on **Environment & Cancer** and Dr. Shivendra Singh, Sr. Consultant & Chief of GI Oncosurgery & Liver Transplant Services and Director - Academics spoke on **HIPEC in GI Cancers** in the said conference.

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EDITORIAL

- the wrong patient in the operating room;
- surgery performed on the wrong side or site;
- the wrong procedure performed;
- failure to communicate changes in the patient's condition;
- disagreements about proceeding;
- Retained instruments or swabs

This means that all theatre staff should follow protocols and be familiar with the underlying principles supporting a uniform approach to caring for patients. Checklists in the operating theatre environment are now accepted as standard safety protocols. The surgical safety checklist identifies specific checks to be carried out at three obligatory time points by Anaesthetist, Surgeon & Nurse.

We should have leaders who are systems thinkers and foster a culture of continuous QI. Those leaders should be visible at the front line and be

champions of a supportive practice environment. Improvement in the quality of care does not occur by chance. The underlying principles must include the creation of value for the patient and a constancy of purpose. There is a pressing need to develop QI learning across the continuum of medical education.

In nutshell, to err is human, but with developing technology and availability of advanced AI solutions, human factors should focus more on ensuring patient safety and continual quality improvement with emphasis placed on System of care and prevention of errors, Learn from the errors that occur and build a culture of safety.

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