

Dissertation

Human Factors in Healthcare

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Abstract

This Dissertation is a vibrant conversation in the medical science about the human errors in the healthcare and about the remedies of these errors. This also focuses on improving the clinical performance and reducing the inefficiencies, leading to job satisfaction. The document also talks about the solutions to nullify these errors. Mainly the objective of this Dissertation is to measure knowledge among healthcare workers about standard precautions. The text also talks about the root causes of the medical errors and how the use of technology helps in minimizing these errors. The text also give light on team work which also helps in reducing the mistakes occur during any process of medicinal work. The diagnostic errors which occur due to communication, coordination and also solutions for these errors.

Location where research is done- Bhawani Mandi, Jhalawar

Hospital chosen- Noon Hospital and Research Center (NHRC)

Introduction

People have a finite quantity of attention. Healthcare professionals are the most highly trained, motivated, and conscientious workers. When we are exhausted, we work hard. We can concentrate on a single task at a time. We tend to forget stuff. Failure is possible when systems ask us to go beyond these and other limits. Preventing medical errors is critical; the system should be robust enough to respond quickly when an incidence occurs.

Our research focuses on objectives such as how healthcare staff handle routine precautions. The initial givers of situations that require urgent care to hospitals include staff nurses and young and senior residents. In hospitals, hand cleanliness, the usage of a PPE kit, and needle safety procedures are all beneficial. A nosocomial infection, also known as a hospital-acquired infection (HAI), is an illness that develops in patients in a hospital or other health-care institution when the infection was not present or could not be discovered when they were admitted. This includes infections from local personnel as well as diseases that were diagnosed in the hospital but arose after discharge. Quality improvement procedures are commonly utilised in the agricultural and manufacturing industries, but some people argue that because of their expertise, they cannot be used in health care. In most cases, patient care is not regarded a realistic alternative. Nurses rely on their experience in caring for patients to make the best judgments for each instance. The most common causes of medical blunders. How technology is being utilised to bridge the gap In the setting of complex healthcare systems, effective cooperation is critical for patient safety, reducing the negative consequences of communication with others as well as patient care, and preventing additional misunderstanding of roles and duties.

Diagnostic errors occur when doctors are unable to accurately diagnose or explain a patient's health problems in a timely manner. Based on the findings, a correct or timely diagnosis reduces its odds. This loss of opportunity could be caused by cognitive, systemic, or both reasons. Evidence of omissions on failure is required to reduce bias.

The data and experience used to understand and manage diagnostic errors to promote patient safety in primary care are summarised in this article. However, intervention is necessary to avoid misdiagnosis, as well as the other significant difficulties discussed in this package.

A) Human Factors in Healthcare

Healthcare personnel are among the best-trained, most driven, and most diligent workers. When patients do not always receive evidence-based care, how can medical malpractice become a big public health issue?

Healthcare professionals, despite their education and desire to give the best possible care, might be plagued by misunderstandings regarding poorly built medical devices and non-compliant treatment processes. These programmes are frequently built without regard for how people interact with their work environment.

People only have so much attention to give. When we are exhausted, we work hard. We can concentrate on a single task at a time. We tend to forget stuff. Failure is possible when systems ask us to go beyond these and other limits.

Doctors will not be protected from mistakes if you tell them to "try harder" or "be more careful." Attempts to enhance care solely through education, on the other hand, tend to make little, if any, progress. The health-care environment should be created with people's limits and skills in mind to reduce or prevent such injuries.

This focuses on human factors, a scientific discipline aimed at assisting people in performing at their best, improving the overall system's robustness and performance, and reducing errors.

Personal characteristics-based solutions make it "easy to accomplish things well and difficult to do badly." Errors are less likely to result in injury when they occur.



1) Applications of Human Factors in Health Care

Human variables experts in medical services work to further develop human framework associations for everybody included, including medical services suppliers, patients, and relatives. They can try to work on the wellbeing and value of a particular item, like a clinical device, or a whole consideration conveyance measure or authoritative construction (for example authority, store network the executives, and so forth) These specialists attempt to sort out what impacts framework execution — the actual climate, the undertakings, instruments, and innovations included, and the authoritative settings wherein the work is done — and afterward update frameworks to advance patient security and group execution.

These methods can be used to:

- minimize clinician blunder
- improve clinician execution
- increase conveyance of proof based medication
- enhance patient-and family-centeredness of care
- improve patient-supplier correspondence
- reduce shortcomings and non-esteem adding undertakings

Human techniques have been employed in complex, potentially dangerous situations like as aeroplanes and nuclear power for decades, but their introduction to health care was delayed until the landmark report "To Err is Human: Building a Safer Health Care Program" by the Institute of Medicine in 1999. These methods and tools are not commonly recognised, and more effort is needed to integrate human resource methods and technologies into the improvement of health care.

1) Human Factors in Action: Examples from the Field

a) Safe Medication Storage

The two Johns Hopkins and the Joint Commission require multidose insulin pens to be put away in persistent explicit compartments in the drug region. Patients' necessities, doctor demands, calls, and different interruptions, then again, commonly prompted medical attendants to place the pens in their pockets and make sure to return them later. Prescription missteps came about because of this training.

A unit-based security group made, introduced, and assessed clear plastic lockboxes in every understanding's space to contain an insulin pen in a joint effort with a human components engineer.

b) Improving Safety of Cardiac Surgery

In a multidisciplinary approach that includes 22 surgical surveys at five respectable institutions, human engineers, physicians, results researchers, psychologists, and social scientists are actively striving to discover the hazards of heart surgery. Their thorough investigation uncovered 58 different categories of risks relating to malfunctioning devices, underlying structures, procedures, and organisational structures – anything in a workflow that has the potential to create error. Informal drug trafficking, which might lead to doctors prescribing the wrong prescription, a surgeon introducing a new pistol during the process, and purchasing practises that did not account for the lower security decisions were among the dangers.

c) Preventing Infusion Pump Errors

There have been occurrences where the cylinder from the stockpile siphon crashed into the siphon's touch screen, causing an inadvertent change in the information rate. Plexiglas, a transparent watchman that permits specialists to move the cylinder without erroneously changing the siphon settings, was added with the assistance of a HR engineer.

3) Preventing Human Errors in Healthcare

Human mistake is a contributing factor in 70 to 80 percent of industrial accidents, as well as a high number of health-care errors and adverse events. Indeed, in some health-care contexts, it is often assumed that human error is to blame for many traumatic incidents. Several variables contribute to human error in healthcare settings.

- A significant number of surveys and recommendations are published on a regular basis. In 2010, a new journal article was published every 40 seconds in the National Library of Medicine, and that number is expected to rise in the coming years. With a vast amount of fresh science that should affect care decisions, no healthcare provider, other than a volunteer, can discover the last moment right now.
- Clinical treatment is delivered as part of a multi-microsystem adaptive system. Some security professionals have suggested that when care is brought in such circumstances, mistakes are likely to occur. This conclusion is founded on the notion that modifying a single micro system, whether for good or bad, will expose the vulnerability of other smaller systems, jeopardising secure care delivery.
- Misunderstandings are common, and they impede our ability to address problems effectively and honestly. We also have major restrictions in our working memory, which makes us more likely to make mistakes as a result of things like anxiety, stress, and lack of sleep.

Finally, an organization's ability to learn from errors and events, as well as focus its efforts on reoccurring errors, is dependent on how well it uses its event-reporting system. As a result, the system must have a number of key characteristics:

- The procedure for reporting incidents must be "very effective." That is, it should be built with the visually impaired in mind and enable for speedy event recording (i.e., within two to

five minutes). Doctors are too busy to enter an event if it forces them to detour from direct patient care for an extended period of time.

- A company's leadership must support and develop a "just culture." "A culture in which employees or others are not punished for their acts, omissions, or decisions based on their knowledge and training, but where excessive carelessness, purposeful violations, and damaging actions are not tolerated," according to the European Commission. Leading providers may oppose to releasing false information if they worry it will affect their professional position if Just Culture is not promoted.
- Data should also be gathered after the event. To ensure that the development of the system presented is incorporated into the delivery of care and accomplishes the desired goal, data should be collected in the background. The organization's search for effective care may not be attainable without these three components.

Research Objective

Q1. To measure knowledge among healthcare workers about standard precautions.

After gaining ethics from the organisation HLFPT, a multi-sectoral investigation was done. HCWs (healthcare workers) from the hospital's emergency and trauma centre participated in the study, which had an active infection control committee and followed waste management rules and best practises. Nurses, junior staff (trainees and postgraduate employees), and senior postgraduate citizens from medicine, surgery, and orthopaedics, as well as those who were regularly referred to the hospital and trauma hospital inpatient care, were among the participants. Nurses on staff and young and old residents are the first responders in circumstances that demand quick attention at the facility.

The minimal sample size necessary for estimating standard monitoring practise among HCWs was 8, with an average accuracy of 15% and a confidence level of 95%. At the hospital's trauma and trauma centre, there are ten HCWs. A population equivalent to the sample size was used to enroll a total of 10 individuals. After receiving written consent, participants were admitted to the study on a regular basis. Participants' privacy was protected by assigning them coded identities.

To collect pertinent data, a pre-designed questionnaire was used. It was self-contained and asked about hand hygiene, personal protection, and needle safety among HCWs during patient care, as well as risk perceptions and compliance barriers.

The data was collected over a two-month period, indexed and analyzed using Statistical Package for Social Sciences (SPSS) version 15.0, and presented with ratings.

RESULTS:

Of the 10 HCWs recruited into the study, 3 (32.7%) were doctors and 7 (67.2%) nurses.

Table 1

Compliance with standard precautions among the participants (N=10).

Study participants	Use of hand rub n (%)	Use of gloves n (%)	Use of masks n (%)	Use of eye gear n (%)	Use of gowns n (%)
Doctors (N=3)	2 (71.5)	3 (82.6)	2 (34.8)	1 (19.2)	1(33.0)
Nurses (N=7)	5 (81.1)	6 (90.6)	4 (67.9)	2 (28.3)	1 (18.8)
Total (N=10)	7 (74.7)	9 (85.1)	6 (45.6)	3 (22.2)	2 (28.4)

1. Hand Hygiene

In the survey, over three-quarters (74.7%) of participants indicated they used hand ointment as a preventative measure, and the majority (95.0%) claimed they used it after coming into contact with contaminants. However, less than half (49.4%) say it is used consistently during patient encounters. Staff nurses (81.1 percent) and junior residents are the most likely to engage in this behaviour (30.9 percent). Hand manipulation was observed at high rates following procedures such as catheter insertion (94.4%) and blood draws (94.4%). (85.7 percent). After removing gloves, 63% of HCWs claim they utilise a hand rub on a daily basis.

2. Use of Personal Protective Equipment (PPE)

The utilization of gloves has been shown to be critical during dying (81.0 percent) and in contact with mucous films or crude skin of patients, as indicated by the gave information (88.3 percent).

Roughly 45.6 percent of members assented to utilize face covers while rubbing, 53.1 percent while doing methods, for example, embeddings the Nasal gastric cylinder, and 39.5 percent while going through lumbar cut. When confronted with a circumstance when the danger of liquid openness is high and the patient's HIV status is indistinct, just 36 (22.2%) and 46 (28.4%) study members are professed to wear eye assurance and defensive garments, separately. In situations where a patient's HIV status is known to be HIV-positive, in any case, about 96% of patients are HIV-positive.

3 Needle Safety

Table 2 shows the numerous dangerous practises identified by HCWs regarding the use of needles in patient care. Successfully, 59.3 percent of respondents were not allowed to retrieve spent needles, while another 30.0 percent said they removed needles from syringes by hand. Around 18% of those polled agreed that used needles should not be disposed of in sharpened receptacles. Needless to say, 17.2% of HCWs reported a needle stick injury (NSI) at least once in the previous year.

Table 2

Hazardous needle practices among the participants (N=10).

Unsafe practices	Doctors (N=3) n (%)	Nurses (N=7) n (%)	Total (N=10) n (%)
Recapping needles after use	2 (72.4)	2 (32.1)	4 (59.3)
Bending or breaking needles by hand after use	1 (12.8)	1 (15.1)	2 (13.6)
Manual removal of needles from syringes	1 (23.9)	2 (43.4)	3 (30.2)
Improper disposal of the used needles	1 (22.9)	0 (7.5)	1 (17.9)

4 . Perception of Risk

More than 60% of health-care employees thought they were at high risk of contracting blood-borne illnesses (61.7 percent for hepatitis B and hepatitis C infection). Despite this assumption, 12 (7.4%) individuals had not received the entire hepatitis B immunisation

schedule. Only 5.6 percent of the 17.2 percent of respondents who claimed to have had an NSI in the past admitted to reporting it to the appropriate authorities (Table 3)

Table 3

Perception and practice among HCWs (N=10).

HCWs	NSIs in the last one year n (%)	Received complete schedule of hepatitis B vaccine n (%)
Doctors (N=3)	1 (22.0)	3 (90.8)
Nurses (N=7)	0 (7.5)	7 (96.2)
Total(N=10)	1 (17.2)	10 (92.6)

5 Barriers to Compliance

Participants in the study acknowledged some difficulties in complying with PPE when it was required (Figure 1). While a lack of time appeared to be the most common cause, the inability to obtain protective equipment in an emergency circumstance was also cited as a major deterrent. Other less important issues were the risk of offending patients and a lack of knowledge about how to use the device properly. Doctors appeared to be encouraged by their peers to avoid wearing PPE.

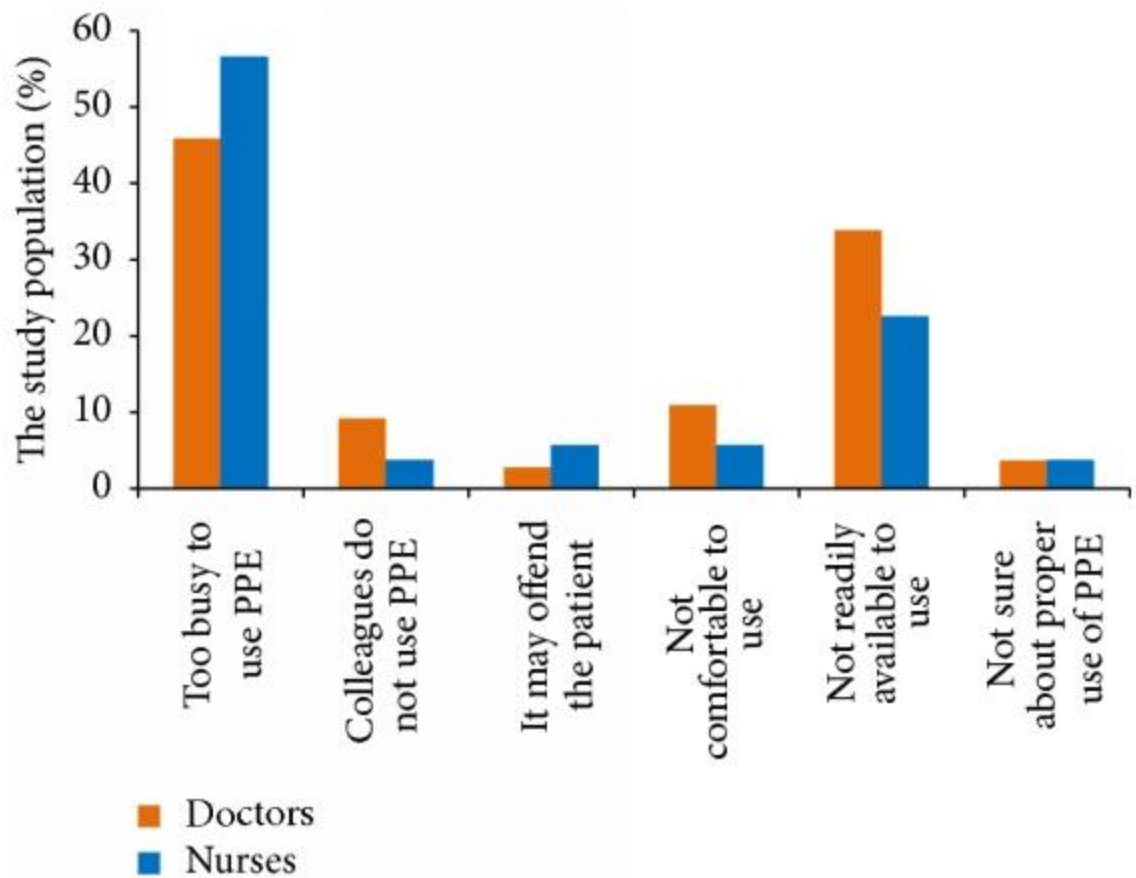


Figure 1_

Barriers to PPE compliance among HCWs (N=162).

Q2. To investigate their practice towards standard precautions.

A nosocomial infection, also known as a hospital-acquired infection (HAI), is an illness that develops in patients in a hospital or other health-care institution when the infection was not present or could not be discovered when they were admitted. This includes infections from local personnel as well as diseases that were diagnosed in the hospital but surfaced after discharge. In both rich and developing countries, HAI contributes to serious sickness and mortality, long-term hospitalisation, and increased medical expenses. In the developed world, the prevalence is claimed to be 15% among patients, with levels as high as 37% of patients admitted to the Intensive Care Unit (ICU). However, the incidence in poorer countries is substantial, with a 19 percent rise in patients, owing to poor infection control practises and hospital overcrowding. Antibiotic overuse and misuse has exacerbated the problem of drug-resistant antibodies among organisms, which can thrive and be transferred as HAIs.

Health care workers are more likely to contract diseases like HIV, Hepatitis B, and Hepatitis C as a result of work-related physical injuries (blood or other body fluids in the eyes, nose, or mouth), abnormal injuries (needle stick or other sharp injuries), or exposure to fragile skin with pathogenic substances. Traditional preventive procedures are founded on the assumption that all blood or bodily fluids may contain infectious pathogens, and that testing should be done on all patients, regardless of diagnosis. They are a simple set of effective measures for protecting health workers and preventing infection in patients. Hand hygiene, gloves, clothes, a mask, eye protection, or a face shield are all common preventative precautions. It also covers the proper handling of potentially contaminated equipment or items in the patient's surroundings.

Nurses provide a substantial portion of health-care tasks, such as parental care, bedding, nursing, patient care, wound dressing, and so on. They are also at risk of contracting HAIs. To avoid the spread of disease to patients and health workers, strict adherence to the protocol for preventing infection by nurses is essential. As a result, the current study was carried out to determine the level of knowledge and the prevalence of performance metrics among staff nurses.

Materials and Methods

This three-month restricted descriptive study including eight nurses was undertaken at Noon Hospital in Bhawani Mandi from March to May 2021. Participants are chosen at random from a pool of candidates. Prior to conducting the study, permission from the appropriate authorities was acquired. We were able to gather information on the eight hospital staff nurses and their work stations. The investigator made an informed visit to the hospital department, and the goal of the study was disclosed to the staff nurses as soon as a rapport had been established. The staff nurses signed a consent form, and a questionnaire was designed and prepared to collect data. Complete confidentiality was preserved, and participants were assured of the same. Questions about personal information, nurse staff awareness of typical monitoring measures, and procedures connected to doing so were included in the survey. The interviewer asks questions and then notes down the responses to the themes. Participants were provided feedback on their responses after the data was collected. Those who adhere to the rules are praised, and attempts are made to educate those who are in need.

S.no.	Variables	No. of	subjects
		No.	%
1	Do you wash hand with soap and water or antiseptic solution before and after handling patients? (Yes)	7	95
2	Do you wash hands after removing gloves? (Yes)	7	92.5
3	Do you use glove and protective gear, when carrying out procedures and handling patients? (Yes)	7	95
4	Do you wear gloves while handling blood or body fluids? (Yes)	7	87.5
5	Do you protect eyes while handling blood and body fluids? (Yes)	4	47.5
6	Do you clean the area with sterile swab before giving injections? (Yes)	7	87.5
7	Do you disinfect skin before intravenous catheterisation? (Yes)	7	90
8	Do you cover broken skin before coming to work? (Yes)	7	92.5
9	Do you use disposable needles, intravenous sets, etc.? (Yes)	7	87.5
10	Do you take extra care while handling sharp objects like needles? (Yes)	7	92.5
11	Do you recap used needles? (No)	6	80
12	Did you ever sustain needle injury? (Yes)	5	57.5
13	Did you report and take treatment for needle injury? (Yes)	4	47.5
14	Have you observed or assisted sterilization process in hospital? (Yes)	7	90
15	Have you been trained to use autoclaved linen and instruments as per protocol? (Yes)	6	80
16	Do you practice high level disinfection policy? (Yes)	5	67.5
17	Do you always wipe spills?(Yes)	7	87.5
18	Do you dispose needles and sharps into designated container? (Yes)	7	92.5
19	Have you been vaccinated against Hepatitis-B? (Yes)	5	60

Conclusion

The current examination uncovers that staff medical caretakers in the investigation climate have a healthy degree of information and works on with respect to customary insurances, just as a few regions where instructive intercessions are required. Direction meetings for new representatives and hands on preparing for current workers are earnestly required. In this sense, medical clinic organization has a bigger task to carry out in creating severe and obvious working environment arrangements.

Q3. To identify specific areas that may need further attention in the continuing education of healthcare workers.

Quality improvement procedures are commonly utilised in the agricultural and manufacturing industries, but some people argue that because of their expertise, they cannot be used in health care. In most cases, patient care is not regarded a realistic alternative. Nurses rely on their experience in caring for patients to make the best judgments for each instance. One of the most significant impediments to health-care quality improvement is a lack of awareness of how systems and processes interact with human care. Quality improvement efforts can be focused on practises while physicians provide alternative patient care with this understanding.

When using quality improvement tools and tools in health care, there are five guiding principles that health care organizations should consider.

1: Facilitate Adoption Through Hands-on Improvement Projects

Simply presenting physicians with ideas and discussing quality-improvement studies does not motivate them to take action. The job of enhancing hands-on use in a genuine clinical setting is the finest way to read quality improvement theory and learning methods. Identifying a key area for doctors to improve and creating a platform for development will help you gain acceptance.

2: Define Quality and Get Agreement

In a specific setting, deciding a meaning of value sets up what ought to be estimated and how information ought to be procured through those techniques. The Institute of Medicine (IOM) concocted a subjective structure for medical care frameworks that contains roughly six destinations, yet the most fundamental one in characterizing quality expresses that actions should zero in on the patient:, needs, and values, and that patient qualities should lead all therapy choices.

Patient needs ought to be remembered for acceptable depictions (patient-announced results, or PROs). Do patients with long haul diseases improve treatment? What is the condition of their wellbeing? Medical services associations are as yet figuring out how to evaluate PROs to guarantee that they are zeroing in on basic patient development. Quality improvement endeavors are likewise centered around wellbeing, effectiveness, and timeliness, notwithstanding quiet focused consideration.

Quality in medical services value is characterized by the IOM quality system as "giving assorted quality consideration dependent on close to home models like sex, race, area, and financial position." A reasonable meaning of value work carries progress to all fragments of society and closes abberations.

3: Measure for Improvement, Not Accountability

Improvements in data quality and power measurement, however this is where health care differs from other businesses in terms of difficulty. When physicians first learn about quality-improvement initiatives, they assess their own performance, which entails responding. Differentiating strategies to improve response measures is critical.

Frequently, response steps are transformed to percentages. The response rate, for example, tracks the percentage of ER patients who wait more than 30 minutes. Managers must keep waiting times to a minimum of 30 minutes. The upgrade rate records real-time waiting minutes in minutes in order to assess system performance (rather than human performance) and optimise the process. Improvement initiatives can supplement existing work stages, but improvement approaches generate high-value data that leads to considerable improvements, saving time and resources in the long run.

4: Learn from Variation in Data

The team's ability to achieve the improvement goal is aided by a thorough understanding of the Model for Improvement framework. Understanding data variance and the sources of that variation is a part of this knowledge.

Intended and unintended variation in data

Variations in health-care processes are both purposeful and unintentional. Intentional variety is when someone makes a conscious decision to do something different. That is what patient-centered care entails. Nurses can be resistant to the idea of diminishing variety because it is a part of their everyday work. They purposefully prescribe one therapy or dose for one patient and a different treatment or dose for another. Targeted diversity is a good practise and a requirement of the job.

To discover and eliminate unwanted deviations, the diversity perspective was introduced. Many systems have many clusters of unintentional variations, which add up to a lot of wasted money. When various doctors in the same practise prescribe different antibiotics for the same condition for no apparent reason or awareness of variability, this is known as unintentional variability. It is not meant if the difference is inconceivable, habitual, or simple. However, if each clinic has a reason for their unique selection and the diversity persists, it is considered targeted.

B) **THE EIGHT COMMON ROOT CAUSES OF MEDICAL ERRORS**

As indicated by the Agency for Healthcare Research and Quality, there are eight normal main drivers of clinical blunders which include:

1) COMMUNICATION PROBLEMS

The most widely recognized reason for clinical blunders is a breakdown in correspondence. These issues can begin from a clinical or medical services framework and can happen between a specialist, an attendant, an individual from the medical care group, or a patient, regardless of whether verbally or recorded as a hard copy. Clinical mistakes are every now and again brought about by an absence of correspondence.

2) INADEQUATE INFORMATION FLOW

In any medical clinic setting, data stream is urgent, particularly between various help regions. At the point when important data doesn't go with a patient when they are moved to another medical clinic or delivered starting with one part or association then onto the next, this is known as inadequate data stream. The accompanying issues can emerge because of inadequate data stream:

- The absence of urgent data when expected to impact recommending choices.
- Lack of fitting correspondence of test outcomes.
- Poor coordination of prescription orders for move of care.

3) HUMAN PROBLEMS

The most well-known reason for clinical mistakes is a breakdown in correspondence. These issues can start from a clinical or medical services framework and can happen between a specialist, an attendant, an individual from the medical care group, or a patient, regardless of whether verbally or recorded as a hard copy. Clinical blunders are oftentimes brought about by an absence of correspondence.

4) PATIENT-RELATED ISSUES

These may incorporate improper patient recognizable proof, lacking patient appraisal, inability to acquire assent, and deficient patient instruction

5) ORGANIZATIONAL TRANSFER OF KNOWLEDGE

Absences of preparing and insufficient schooling for vocations are instances of these issues. Data move is basic much of the time, particularly when new workers or transitory assistance are required.

6) STAFFING PATTERNS AND WORKFLOW

Lacking business doesn't cause clinical blunders all alone, however it can put medical services workers in circumstances where they are to blame.

7) TECHNICAL FAILURES

Inconveniences or issues with clinical gadgets, inserts, unions, or gear are instances of specialized disappointments.

8) INADEQUATE POLICIES

Helpless documentation and non-existent or deficient cycles are habitually to fault for disappointments in the consideration interaction.

(C) How is technology helping to fill this gap?

Medical errors can be caused by a variety of factors, including communication issues, insufficient information flow, and inadequate medical staffing, to mention a few. The global healthcare business is confronted with apparently intractable difficulties, ranging from the elderly and personnel shortages to rising expenses, all of which place significant strain on institutions, doctors, staff, patients, and communities.

As a result, there is a significant demand for services and insufficient assistance with current resources and methodologies. To lessen the complexity of an already unstable system, hospitals are increasingly turning to technology and automation. Clinical adoption aids hospitals throughout the world in eliminating manual, error-correcting processes and replacing them with digital solutions that improve patient identification, improve patient care quality, and increase overall visibility. Data may be captured digitally and delivered in real time to healthcare professionals, decreasing and eliminating errors and saving valuable time.

1) Computers use in Medicine, their uses, Advantages and Disadvantages

Many applications that serve laparoscopic surgeons, such as medical imaging, digital X-ray imaging, digital microscopy, electronic health records, clinical decision support systems, hospital administration, and video games revolution, rely on computers to deliver large amounts of medications and data.

Computers can be used to keep track of patient-specific prescriptions as well as medications that aren't given to them. Massive amounts of data can be easily archived, fast data processing

can be enabled, information can be stored in large databases, and shared information may be accessed from anywhere in the world.

Computers assist scientists in gaining access to the Internet. In today's world, the Internet has become a significant source of medical knowledge. Medical information, medical journals, research articles, diagnostics, critical medical records, and electronic citations are best stored on computers. Computers are an excellent tool to keep track of patient data. Patient data is stored on computer systems in large hospitals. It is necessary to keep accurate records of the patient's medical history, family history, and disease information. Pre-diagnosed diseases are desirable to doctors, and prescription medications can save this data in computer databases. From alarm systems to hospital beds to emergency alarm systems, X-ray devices, and a range of medical gadgets, today's medical devices feature microcomputers configured to work in pre-programmed directions.

Computer programmes can be used to examine built-in body composition, diagnose diseases, analyze sensitive sections of the body using computer systems, and use computers to execute diseases for various surgical difficulties. Computer programming is used in hospital monitors. Numerous cutting edge filtering and imaging advances depend on PC innovation, infrared cameras, and progressed PC use to make pictures of the human body for clinical purposes, and numerous cutting edge checking and imaging advances depend on PC innovation, utilizing infrared cameras and progressed PC use.

Computers create 3D images in medicine, MRI uses computer software, and computed tomography uses digital engineering methods to create 3D images.

Computers allow patients and doctors to interact more quickly, work more efficiently online, and doctors to obtain expert opinions from the Internet in seconds, discuss medical issues in the ward, and alter images and reviews. On the Internet, you may send a message in seconds and immediately exchange results, advice, and expertise.

Because computers can run medical tests and mimic sophisticated surgical operations, they play a vital role in medicine. Before making a diagnosis, doctors use X-rays and CT scans to understand more about the patient. Radiation is used in X-rays and CT scans to view images of the body's internal structures. Any irregularities that could explain the situation will be reported by your doctor.

Doctors can utilise X-rays to observe a patient's internal structure from a single two-dimensional viewpoint, collect X-rays with CT scans to build a multidimensional view, and collect X-rays from the patient's body.

MRI scans are used by doctors to assess the state of the body's soft tissues. MRI scans and reproduces images of inside body structures using a high magnetic field. Internally, the MRI machine transmits the detected activity to a computer, which displays an image of a specific location.

Computers provide three-dimensional images of the scanned area's activity, as well as computer-generated images that allow doctors to properly assess and diagnose a patient's physical activity, and doctors are minimally invasive even without a computer. You are capable of performing surgery.

Researchers can use online databases to properly anticipate disease development, onset, and therapy, as well as take precautions to aid computer scientists in recognising disease activity and controlling its spread.

Before going to see a doctor, folks might utilise the internet to search for common symptoms. Patients can perform a simple internet survey and get several treatment alternatives to cure the problem instead of seeing a doctor for minor symptoms. You're familiar with internet medications. Patients can make informed, autonomous decisions by researching on the internet. Computers assist in the control of physical motions. The goal of this programme is to alert nurses and doctors to potentially dangerous changes in their patients' blood pressure, pulse, and oxygen levels, as well as to detect and document those changes.

Blood pressure measures systolic and diastolic counts, which check blood pressure between heartbeats, and ECG detects electrical pulses on the screen with ups and downs.

Patients, doctors, and nurses can communicate more quickly thanks to the Internet; drugs, medical bills, meals, and medication times are all saved on computers; and medical device data systems store electronic data such as nursing services clinical trial findings.

There are robotic surgical systems, which are computer-assisted operations, as well as more complex and safer surgeries that use computers and can be trusted to produce products as promised.

Computers are utilised for a range of activities, including organ examination and manipulation through small incisions. In robotic surgical systems, most surgeons employ a variety of equipment. This includes robotic surgical systems, which enable doctors to develop surgical tools using computer technology and employ them in minimally invasive surgery.

The computer surgical system is made up of three parts: a console, a bedside table, and a hardware and software-supporting cart. It is the system's first control centre, allowing surgeons to see the surgery site. He does a physical examination of himself.

The second is an electrosurgical unit (ESU) that offers a light source for an endoscope and a suction/irrigation pump, and the third is equipment such as an electrosurgical unit (ESU) that provides a light source for an endoscope and surgeon-controlled equipment. Computers have clearly become an integral element of all types of work, and their quality has improved.

The hospital is a fantastic establishment. To administer hospitals, you can utilise computers, accounting systems, hospital pay, and inventory automation, as well as execute registration, distribution, and use of various pharmaceuticals in various departments.

Many technologies to assist persons with hearing impairments are utilised, as are many automated equipment to monitor blood pressure, heart rate, and brain analysis of cells and bacteria in the patient body for a better knowledge of humans.

Various programmes record various diseases and symptoms; you can diagnose a condition by recording the patient's symptoms; and different computers are utilised in the laboratory for various blood tests.

Computer-based hospital monitoring, emergency alarms, bedside horn systems, and X-ray equipment are just a few examples of computer-based technologies. High-resolution images are taken using a state-of-the-art computer and X-ray camera, and magnetic resonance imaging (MRI) and computed tomography (CT) scans are acquired using computer software.

Some procedures, such as laparoscopic surgery, are computer-assisted, with clinicians inserting medical instruments and portable cameras and performing the procedure using computers and monitors.

Computers can track heart rate, pulse, and brain activity; computer networks can connect swiftly; photographs and information can be shared in seconds; and conclusions can be reached quickly. In medicine, computers are employed to create medications and to support computer systems in research.

2) Disadvantages of Computers in Medicine

The most significant disadvantage of electronic medical data is the need to preserve your privacy, as there is a possibility of infringement, illicit downloads, unintentional loss, and other issues.

Adding computers to the hospital can help speed up the process of paying bills and keeping track of medical information, but as technology and computers advance and more aspects enter the hospital setting, computers can become a liability. In a hospital setting. In truth, some debate may be taking place.

Adding computers to hospitals can be costly due to the high cost of computers, and major hospitals require a huge number of computers to keep the system functioning smoothly.

Another step in the preparation process is to set up a network for exchanging medical records and monitoring accounts.

Computers, computer programmes, and other electronic things must be maintained on a regular basis in order to keep electronic records. Because electronic products are more expensive than paper documents, only a few extra copies are required. The lack of medical standardisation is the most significant disadvantage of connecting computers and electronic documents to hospitals.

When hospitals transmit medical records or open systems, they can share information. Medical records with insufficient uniformity can make it difficult for specialists to interpret them.

The security of medical records becomes a concern when a doctor or hospital employs computer or electronic records, while paper records are stored in the clinic or doctor warehouse. When introducing computers to a hospital, however, they normally adhere to electronic records.

Medical information is added to the restricted computer network when electronic registration begins. However, the system is sensitive to external sources and discusses privacy issues as long as the network has an internet connection. The right to privacy and safety for patients starts here.

(D) Team Performance in Medical Field

Numerous cutting edge filtering and imaging advances depend on PC innovation, infrared cameras, and progressed PC use to make pictures of the human body for clinical purposes, and numerous cutting edge checking and imaging advances depend on PC innovation, utilizing infrared cameras and progressed PC use.

Definitions

Teams are dynamic subordinate groupings based on common objectives/objectives/tasks that can be divided into two or more people allocated to a certain job or task. A limited number of lifetime memberships are available.

Group care is when two or more health care professionals collaborate with patients and caregivers to provide health care to individuals, families, and/or communities (depending on the wishes of each patient). The highest possible warranty quality must be attained. There are numerous advantages to incorporating shared accountability with team members into your healthcare system. In practise, however, even with inadequate teamwork, sharing duties might put patients at risk. For instance, a key driver of patient behaviour toward health care workers is a lack of communication between health care professionals and patients. Medical errors, completion errors, and other accidents can all be caused by a lack of communication between team members. Furthermore, a lack of genuine group supervision might result in waste. As a result, recognising best practises can help you minimise these risks while also keeping expenditures under control.

An effective TAN team is one in which team members, including patients, communicate with one another and use observation, experience, and decision-making roles to improve patient care. Understanding your company's culture and how it affects team dynamics and performance helps your employees work as a cohesive unit.

Importance

Today, just a small percentage of healthcare professionals look after their patients. In the setting of complex healthcare systems, effective collaboration is critical for patient safety because it lowers the negative consequences of a lack of communication with others, poor patient care, and misunderstanding of roles and duties. The patient, without a doubt, should look after the intensive care unit and participate in the communication process. The length of engagement and the initial level of engagement have both been found to lower the risk of errors and side effects.

The evolution of patient care

The patient was cared after by an all-knowing doctor and a local private nurse who made it easy to contact you whenever needed. Over the last two decades, health care has evolved at a breakneck pace. Personal health training is unwelcome and appears to endanger the patient. The constantly expanding complexity of modern healthcare is converting healthcare workers from soloists to team members seeking a single objective as a driving force.

As physicians and patients incorporate new technologies into their management processes, the general pace of change in healthcare systems continues. The National Institutes of Health in the United States currently includes over 2,700 clinical practise guidelines and publishes over 25,000 new clinical trial results each year. Many members of the team require professional assistance.

This group has made a significant effort to stand out among health science and practise experts. The knowledge and methods of the other team members are relied upon by each physician. However, without clear understanding and intensive team development, it is impossible to repair and prevent gaps and systematic errors.

Characteristics of a Successful Health Care Team

Core groups-

These people are directly involved in the patient's care.

They are typically made up of team leaders and direct-care providers such as nurses, dentists, pharmacists, doctors, assistants, and so on. Case managers are also included.

Organizing groups-

The group is charge of core team operational management, coordination functions, and resource management.

Teams for contingencies-

To deal with emergencies or unique situations, the group was formed (e.g. cardiac-arrest teams, disaster-response teams,. etc).

Teams/services that aren't directly related to the main mission

The organisation sponsors services that help patients.

Support services and administration

A person who gives medical support to a mission in an indirect and mission-specific manner.

Secretaries and unit or centre management fall into this category. This team is in charge of the organization's overall performance 24 hours a day, 7 days a week. According to research, we often take the following actions to form a cohesive, efficient, and strong team facing future challenges:

Forming- It's frequently hazy and perplexing. At this time, team members may be unsure about what to do. You haven't decided to collaborate yet, so you can talk in a surface-level, impersonal manner.

Storming- It's a challenging stage that might lead to disagreements among team members as well as issues with allocated responsibilities. It might be aggravating if your teammates do poorly.

Norming- The team begins to function after establishing an open relationship among its members. Establish a communication model and procedure that is widely recognised.

Performing- The team will put forth every effort to attain its objectives. Teams are now cohesive, open, confident, cooperative, and productive.

The unifying purpose of medical teams is to train, maintain, dynamically collaborate, and provide healthcare to patients. Team members must possess particular characteristics in order to be effective, such as:

- They have specialised knowledge and abilities and frequently work under duress; they understand their own and others' roles in the team and collaborate to achieve common goals.

As a result of the interdependency of the duties done by team members, act as a collective entity.

- Make judgments based on specialised and complementary knowledge and abilities.

(E) Diagnostic Errors

The first responder's knowledge, experience, abilities, and available resources will all play a role in making an accurate and quick diagnosis. Identify high-risk sites for primary service failure. First-responders frequently encounter a large number of patients, making it difficult to diagnose a case due to possibly challenging clinical symptoms. First responders have little expertise with unusual situations, and clinical trials may be difficult to come by. Frontline staff are referred to as "service providers" in this poll.

A misdiagnosis occurs when there is a misdiagnosis. The diagnosis is frequently forgotten (the cancer goes away despite the symptoms), incorrect (ask the patient for a different diagnosis), late (bad test findings), or the patient is unable to be informed about the malignancy. This category may contain duplicates.

Beginning assessment, execution and translation of demonstrative tests, checking and observing of symptomatic data, correspondence and reference coordination, and patient conduct, consistence, and investment are everything that are usually done after some time as opposed to at the same time. At these spots, indicative blunders are conceivable.

The inability to correctly and timely describe the patient's health concerns, or to communicate these descriptions to the patient, is referred to as diagnostic mistakes. Based on the findings, a correct or timely diagnosis reduces its odds. This loss of opportunity could be caused by cognitive, systemic, or both reasons. Evidence of omissions (not performing the proper thing) or right (wrong) on failure is required to prevent bias. Misdiagnosis, wasted opportunities, and patient harm are all linked. Vendors, medical teams, systems, and patients all have the potential to miss out on possibilities. Diagnostic mistakes or delays are beyond the suppliers' control and can be caused by reasons unrelated to the supplier.

1) Burden of diagnostic errors

Although hospital errors appear to be significant, this study demonstrates the importance of recognising diagnostic errors in primary care. In primary care, misdiagnosis is widespread, and most people will be misdiagnosed at some point in their lives.

According to a survey conducted in high-income countries, approximately 5% of adults have diagnostic errors that can lead to death each year. More than half of these errors can result in serious consequences. According to the researchers, this is undervalued, and the false positive rate in low-income nations could be significantly higher.

It is unknown how common misdiagnosis occurs in youngsters. According to a poll of pediatricians in high-income nations, more than half of them are aware that they misdiagnose at least once or twice a month and have been diagnosed at least once or twice a year. Mistakes are dangerous.

Clinical trial resources are scarce in low- and middle-income countries, skilled primary care physicians and professionals are sparse, and records management systems are restricted and may be larger. In the early stages, these factors can contribute to a high false positive rate. It's not uncommon to get a cancer diagnosis after it's already too late. Because roughly 7% of abnormal test results are not conveyed to the patient, diagnosis may be delayed. Failure to complete the referral process may result in diagnostic mistakes and delays.

2) Causes of Diagnostic Errors

Errors might happen at any point during the diagnostic process. Investigating a misdiagnosis, on the other hand, frequently discloses the fundamental reason. Cognitive errors such as incorrect evidence collecting or abuse of physical examination or examination data are possible causes. Indeed, it's possible that cognitive impairment can be diagnosed in more than half of all misdiagnoses. Treatment communication and coordination issues, medical record issues, and misdiagnosis owing to insufficient access to specialists are all possible consequences of system failure.

3) Potential Solutions

Improved service provider knowledge and skills, as well as addressing system difficulties including communications, logging, and testing, are all part of the plan to eliminate diagnostic errors. However, there is little evidence that techniques for reducing diagnostic errors are successful. It will be more effective to use a combination of therapies.

a) Improving education skills

According to research, providers do not always consider all of their options or misinterpret information. Some parts of clinical thought may be more relevant, common, and pragmatic than others. Reflexology training, decision-making mnemonics, and online checklists, as well as technologies to aid in differential diagnosis, are all examples of interventions that improve clinical reasoning. Diagnostic and therapeutic support can be provided by integrating decision support into electronic health records. More research is needed on the clinical characteristics of primary care that have the highest clinical utility.

Beginning assessment, execution and translation of demonstrative tests, checking and observing of symptomatic data, correspondence and reference coordination, and patient conduct, consistence, and investment are everything that are usually done after some time as opposed to at the same time. At these spots, indicative blunders are conceivable.

b) Empowering Patients

Patient empowerment and involvement is a low-cost investment with a high return on investment. It can act as a safety net by allowing patients to track the emergence of new symptoms over time. This does not include informing patients about their symptoms, the risk of illness progression, or continuing medication once their condition has improved. Patients can also actively engage in the review of clinical trial outcomes. You can persuade your doctor to consider a differential diagnosis in general by asking an alternate diagnosis and accessing medical information. By completing follow-up actions and offering feedback, you can help avoid misdiagnosis.

Patient empowerment entails removing misunderstandings, such as doctors' bad news (which helps avoid aberrant test results), and encouraging patients to speak up without fear or concern. However, in locations with a more passive approach and hierarchical culture, this can be difficult.

c) Health Information Technology

In countries all around the world, there are numerous types of medical information technology that can help prevent misdiagnosis. Remote consulting and diagnostics can be useful if you have internet access. Radiography and remote sensing have proven to be effective in the domains of cardiology, ophthalmology, pathology, and dermatology. This frequently allows for improved real-time access to highly regulated technologies.

Medical information technology can help clinicians think more clearly, diagnose mistakes, and improve follow-up. Diagnostic mistakes can be reduced using these medical information technology methodologies and tools.

(F) Concluding Remarks

In many nations, primary care is at the heart of medical care. They serve as entry points to the healthcare system and have a direct impact on people's health and utilisation of other medical resources. Primary care that is insecure or inefficient can raise morbidity and mortality while wasting valuable hospital and specialist resources. Improving primary care safety is thus critical for achieving global health care and health-care sustainability. Safe primary care is essential in achieving the United Nations' Sustainable Development Goals, particularly in ensuring healthy lives and promoting the well-being of people of all ages.

Because primary care is where the majority of health-care services are delivered, it's critical to comprehend the scope and nature of the damage there. However, at this time, the most effective technique to handle security vulnerabilities is mostly unknown.

The data and experience used to understand and manage diagnostic errors to promote patient safety in primary care are summarised in this article. However, intervention is necessary to avoid misdiagnosis, as well as the other significant difficulties discussed in this package.

WHO member states should prioritise identifying basic safety skill packages based on local needs. This section highlights the essential messages from all of the research and lists the ten critical activities that could have the biggest impact on improving primary care safety. There are also links to a variety of online resources and guides that can help countries and organisations advertise their programmes.

1. Set local priorities

Different countries and areas may employ tactics that are effective in one area but not in another. Similarly, issues that require attention in one area may not be prioritised in another. As primary care gets safer, governments can use local data on safety issues to determine their top goals for their country or region. Priorities can be defined based on information provided by patients and specialists, local data on safety issues can be gathered, and significant literature themes can be matched to local circumstances.

Checklists can also be used to identify potential patient safety hazards, such as: B. Basic service environmental risks. A practical option is to get key stakeholders together with local information in mind and construct a framework to produce a strategy and operational plan to improve the underlying service's security. The need of increasing patient safety in primary care is becoming more accepted and recognised as a result of broad communication and feedback-based prioritising among healthcare professionals and patients.

Measuring safety performance indicators on a regular basis should be a top focus. Statistics can be used by policymakers to identify problems in areas where performance isn't up to par and to evaluate various forms of actions to help them better. Every two years, priorities can be altered to fit local requirements and produce remarkable achievements.

2. Take a wider systems approach to improving safety

While these collections focus on certain aspects of technology, each study also includes references to related topics. Improving particular aspects may not have a long-term or meaningful influence on overall patient safety. Improving patient communication, educating healthcare providers, and providing new tools to help with care can all be beneficial.

Adopting a system approach to safe primary care entails looking into the connections between the various components and the various elements that can affect safety. This includes things like worker availability and skill level.

This programme aims to improve communication and coordination between different forms of care, such as primary, secondary, and social care, at the operating system level. We can upgrade our technological system so that we can share records and report on what's going on.

It's also crucial to foster partnerships among healthcare practitioners. On a policy level, one could consider creating a support infrastructure to allow hospital, primary care, and social worker personnel to meet and discuss safety concerns. It has the potential to build supportive relationships and increase mutual understanding of roles. Professionals from various organisations can join regional groups or conferences to get to know one another and discuss their triumphs and problems in enhancing patient safety.

Additional ideas for increasing coordination and minimising fragmentation across systems can be found in manuals and reference lists.

3. Communicate the importance of safety in primary care

Policymakers, healthcare professionals, patients, and families are not always aware of the need to address crucial primary care safety issues. Stakeholders will get a better understanding of why basic safety is so crucial in promoting people well-being and safeguarding finite health resources by raising awareness of this priority topic.

Safety information to educate healthcare professionals, effective communication with patients and patients through proper channels, and the dissemination of vital messages through media campaigns are all examples of practical ways to raise awareness. You can create a communication strategy that incorporates the above-mentioned regional priorities.

4. Focus on building a positive safety culture

Improving frontline safety requires a culture of effective leadership and solidarity. This entails creating a climate in which professionals and patients can freely share their opinions on safety problems without fear of being judged or punished. This entails building a climate in which individuals are willing to report security risks and incidents in order to learn and reduce the frequency of security risks and incidents, as well as the number of incidents that occur more frequently than humans, primarily due to system failures. This also implies that a feedback mechanism is necessary to account for reforms that have occurred since the emergence of security concerns. Building a solid safety culture requires promoting transparency.

A number of tools are available that describe methods for fostering and measuring a positive safety culture.

The following are some practical initiatives you may take to foster a safety culture: Let's consider the advantages and disadvantages of a doctor and director walking around the world (in this case, the employee visits the clinic, the staff, and the patient) and the manager visiting logical t) the team meeting begins with the patient. It employs cautious procedures, such as audits, to focus on security risks and provides a platform for reporting security issues, such as regular team meetings. For usage in smaller primary care clinics, some processes may need to be modified. Whatever technique is taken, the purpose should be to establish particular monitoring in order to increase awareness, promote safety issues, and cultivate a safety culture.

5. Strengthen ways of measuring and monitoring patient safety

It's critical to track and measure changes in patient safety over time. This includes building a national or regional accident reporting system through routine data collection, analysing the patient experience, and assessing the progress of patient safety issues. This may entail the use of measurement instruments.

Individual job checklists improve the quality of maintenance and act as a well-organized diary. Here are some sample security management checklists that you may utilise.

When it comes to tracking patient safety progress, data quality is critical. Errors and omissions are more likely when medical records aren't kept up to date and thorough. Clinical governance methods become increasingly strong as healthcare systems evolve. Defining risk management methods and improvement plans are part of this.

Several tools are used to assess and monitor various areas of primary care safety, allowing countries to discover what resources are already available and align resources with local objectives.

6. Strengthen the use of electronic tools

To strengthen security, digital certificates are necessary in different ways. For instance, electronic health records can be used to gather accurate and full medical records. Data about health may be exchanged quickly and securely. It can be used to diagnose, monitor, and treat diseases and ailments. Change your habits, lower your health risks, empower patients and their families, and take part in personal care. E Health aids in the organisation of professional communication in a way that reduces errors and enhances coordination. Reduce needless visits and hospitalizations, and improve professional and patient access to health information and management. To reach its full potential, however, electronics must be integrated with other aspects of the service and tailored to local conditions.

Electronic device implementation necessitates time and resources, as well as the use and maintenance of electronic devices. To receive the best return on investment, it's crucial to strategically follow the system's principles and design. The use of electronic tools in a regional context should provide the foundation, incentive, and support needed to move forward in a coordinated fashion, in line with the country's electronic health plan.

Whatever the state of the health-care system, encouraging the use of electronic technology to improve patient safety is critical. Electronic health records, rather than medical records, may be introduced in some nations. Others might see this as integrating electronic systems between general care, hospital care, and social care, or as making professional and patient resources more accessible. Countries can benefit from the experiences of other countries when it comes to EPA implementation. This includes the problems you're having, how to fix them, and how to put best practises into action in your area.

7. Involve patients and family members

To ensure patient safety, we must allow and encourage patients to speak up when something appears to be incorrect or when their symptoms are not well explained. Family members can aid and train to increase safety by acting as advocates and health care employees.

Patients and their families can help speed up the implementation of health-protection measures by actively participating. The effectiveness and quality of treatment can be increased if the system is non-interactive and available to the patient.

A number of tools, including those for persons with poor or low literacy skills, have been assessed to improve patient and family involvement and awareness.

8. Strengthen workforce capacity and capability to improve safety

It is frequently required to educate a number of workers, including doctors, nurses, and support staff, in order to develop the primary care workforce.

It should also focus on strengthening the workforce by hiring and keeping employees, as well as taking steps to promote the physical and mental health of health-care personnel. Patient safety can be harmed by fatigue, burnout, and working stress.

To improve safety at all levels of care, health workers need to be educated and trained to manage and limit the risks and potential accidents associated with basic care. Patient safety students (including those who have received primary care training to ensure comprehension of the various areas of care), multidisciplinary and interdisciplinary training, and continual competency-building abilities are all examples of this. There are a number of free training materials accessible for this. Participation in safety and quality improvement might be considered as a need for ongoing education and professional clearance at the next level.

Informal practises, in addition to formal training, can be used to improve health workers' ability to improve safety. Field meetings and training sessions may be used to assess locations where there are safety concerns or where patients need to develop, as well as small team meetings to improve staff abilities.

9. Focus on those at higher risk of safety incidents

Some people are particularly vulnerable to first-aid-related safety incidents. Children, the elderly, persons in nursing homes, and people with various health issues are all included. People with mental and physical disabilities are also vulnerable to security breaches.

By providing more individualised care and ensuring smooth transitions between services, focusing on high-risk groups can improve the quality and safety of care. Experts can be successful in recognising and treating depression in people with common physical and mental difficulties, for example, because there are numerous negative effects in people with common physical and mental disorders.

The majority of health-care systems around the world are not geared to assist people with a wide range of health issues. As a result, you may need to focus more on what the system can do

to improve treatment for persons with multiple illnesses, particularly if social intervention is more beneficial than improved health care.

10. Celebrate success and share learning with others

Local teams, regions, and countries should congratulate each other on their accomplishments and share what they've learned with others. Hearing what's going on can motivate others and make primary care safer.

Ongoing study will aid in determining the most effective ways to increase safety and adopt best practises and findings in various healthcare settings. Despite its enormous knowledge and experience, this technology suite has significant flaws when it comes to increasing patient safety in primary care. Countries can contribute to this field's knowledge by making learning more accessible through the sharing of research and findings.

(G) References

1. Kostopoulou O, Delaney BC, Munro CW. Diagnostic difficulty and error in primary care - a systematic review. *Fam Pract.* 2008
2. Graber ML, Franklin N, Gordon R. Diagnostic error in internal medicine. *Arch Intern Med.* 2005;
3. Singh H, Giardina TD, Meyer AND, Forjuoh SN, Reis MD, Thomas EJ. Types and origins of diagnostic errors in primary care settings. *JAMA Intern Med.* 2013;
4. Singh H, Meyer AND, Thomas EJ. The frequency of diagnostic errors in outpatient care: estimations from three large observational studies involving US adult populations. *BMJ Qual Saf.* 2014
5. Singh H. Editorial: Helping health care organizations to define diagnostic errors as missed opportunities in diagnosis. *Jt Comm J Qual Patient Saf.* 2014 Mar
6. Singh H, Schiff GD, Graber ML, Onakpoya I, Thompson MJ. The global burden of diagnostic errors in primary care. *BMJ Qual Saf* 2016;0:1–11. doi:10.1136/ bmjqs-2016
7. Singh H, Thomas EJ, Wilson L, Kelly PA, Pietz K, Elkeeb D, et al. Errors of diagnosis in pediatric practice: a multisite survey. *Paediatrics* 2010;
8. Casalino LP, Dunham D, Chin MH, Bielang R, Kistner EO, Karrison TG, et al. Frequency of failure to inform patients of clinically significant outpatient test results. *Arch Intern Med.* 2009
9. Singh H, Esquivel A, Sittig DF, Murphy DR, Kadiyala H, Schiesser R, et al. Followup actions on electronic referral communication in a multispecialty outpatient setting. *J Gen Intern Med.* 2011
10. Schiff GD, Kim S, Abrams R, Cosby K, Lambert B, Elstein AS. Diagnosing diagnostic errors: lessons from a multi-institutional collaborative project. In: *Advances in patient safety: from research to*

implementation (vol. 2: Concepts and methodology). Rockville (MD): Agency for Healthcare Research and Quality; 2005

11. Silk N. What went wrong in 1000 negligence claims. Health Care Risk Report. London: Medical Protection Society; 2000

12. Leslie T, Mikhail A, Mayan I, Cundill B, Anwar M, Bakhtash SH, et al. Rapid diagnostic tests to improve treatment of malaria and other febrile illnesses: patient randomised effectiveness trial in primary care clinics in Afghanistan. BMJ. 2014

13. Szczuka I, Pawlicka L, Kus J, Leowski J, Roszkowski K. Analysis of diagnostic errors and recommendations of diagnostic procedures in bacteriologically negative pulmonary tuberculosis. Pneumonol Alergol Pol. 1998

14. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet. 2012

15. Levels and trends in child mortality, estimates developed by the UN inter-agency group for child mortality estimation. NewYork: United Nations Children's Fund; 2014.

16. Ely JW, Graber ML, Croskerry P. Checklists to reduce diagnostic errors. Acad Med. 2011

17. McDonald KM, Bryce C, Graber M. The patient is in: patient involvement strategies for diagnostic error mitigation. BMJ Qual Saf. 2013

18. Singh H, Naik A, Rao R, Petersen L. Reducing diagnostic errors through effective communication: harnessing the power of information technology. J Gen Intern Med. 2008